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**TOWARDS AN APPROPRIATE SYSTEM OF AGRICULTURAL EXTENSION
FOR SAMOA**

**A thesis submitted in partial fulfilment of the requirements for the Degree of Master of
Agricultural Science**

at Lincoln University

by

Faletoi Tuilaepa Suavi

Lincoln University

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**Abstract of a thesis submitted in partial fulfilment of the requirements for the Degree
of Master of Agr. Sci.**

**TOWARDS AN APPROPRIATE SYSTEM OF AGRICULTURAL EXTENSION
FOR SAMOA**

By F.T.Suavi.

The purpose of this research is to determine an appropriate system of agricultural extension to improve the services to Samoan farmers within the framework of government economic rationalisation policies. Policy makers and farmers' perceptions and past experiences with the MAFFM's extension services are examined to determine the socio-economic impact of agricultural extension on local communities. Village communities used in the case study (Siufaga and Samalaeulu from Savaii Island, Malaemalu and Taelefaga from Upolu Island) are involved in a variety of extension systems (T & V system and FSD approach) and price supporting schemes (bonus scheme and subsidies) provided by the government through the MAFFM. Siufaga village had been selected as a pilot area during the AusAID Farming System Project to promote the FSD approach. While the other three village communities are also involved in the FSD approach, adopting the PLA technique, a modified PRA technique, to counter the high expectations of village people.

An integrated qualitative approach including the Survey Approach for policy makers, and the Case Study Approach (adopting the RRA/PRA techniques) for village communities was used to collect both qualitative and quantitative data. Data was analysed using a "*Time Series*" analysis to investigate the trends in budgetary allocations to MAFFM and Extension Division in the past decades. The results are presented in the "*Chronological Structure*" to study the past, present and future trends in agricultural extension experienced by farmers and policy makers in Samoa. The "*Comparative Methodology*" analysis is also used to allow policy makers to compare the MAFFM's extension service with other countries' public extension restructuring and privatization.

The results of this investigation suggest that Samoan rural communities require the policy makers to consider all factors influencing technology adoption if the extension service is to be socially, economically, ecologically and financially sustainable. The results suggest that the MAFFM's extension service could be the major extension provider but there are other alternative extension systems for Samoa. This is consistent with the government policy of promoting the leading role of the private sector in economic development while allocating and utilising its limited budgetary resources more efficiently. The results also indicate that

the PRA procedure, as outlined in this paper, is a suitable applied framework for assessing rural community development needs. This process makes it possible to monitor and evaluate the impacts of extension and allow a full participation of local communities in democratic consultations and negotiations at all levels.

The main implication of these results is that the MAFFM's extension function needs to be restructured to meet the new government policy of improving the efficiency and accountability within the public sector, and of allocating and utilising its limited budgetary resources more efficiently. Coincidentally, the adoption of other alternative extension systems should be explored and all price supporting schemes should be abolished to reduce its budget deficit and accumulated foreign debts. Restructuring is needed to ensure that the Community Development Approach adopting PRA procedures to participatory rural development is prioritised. This would ensure that all members of rural communities, government agencies, non-governmental organisations, input suppliers, funding agencies and private companies fully participate in consultations and dialogue to achieve sustainable community development. As a consequence, complementary extension services can be established. For instance, the government role has to concentrate on policy making, human resource development, social and environmental issues, and provide an extension service to small scale farmers in rural areas, whilst the private sector should deal with semi-subsistence and commercial farmers.

Key Words:

Extension, Privatisation, Commercialisation, Gender Analysis, Participatory Approach, Community Development, Cost Recovery, Comparative Methodology, Chronological Structure, Time Series Analysis, Macroeconomic Restructuring and Reform, Samoa.

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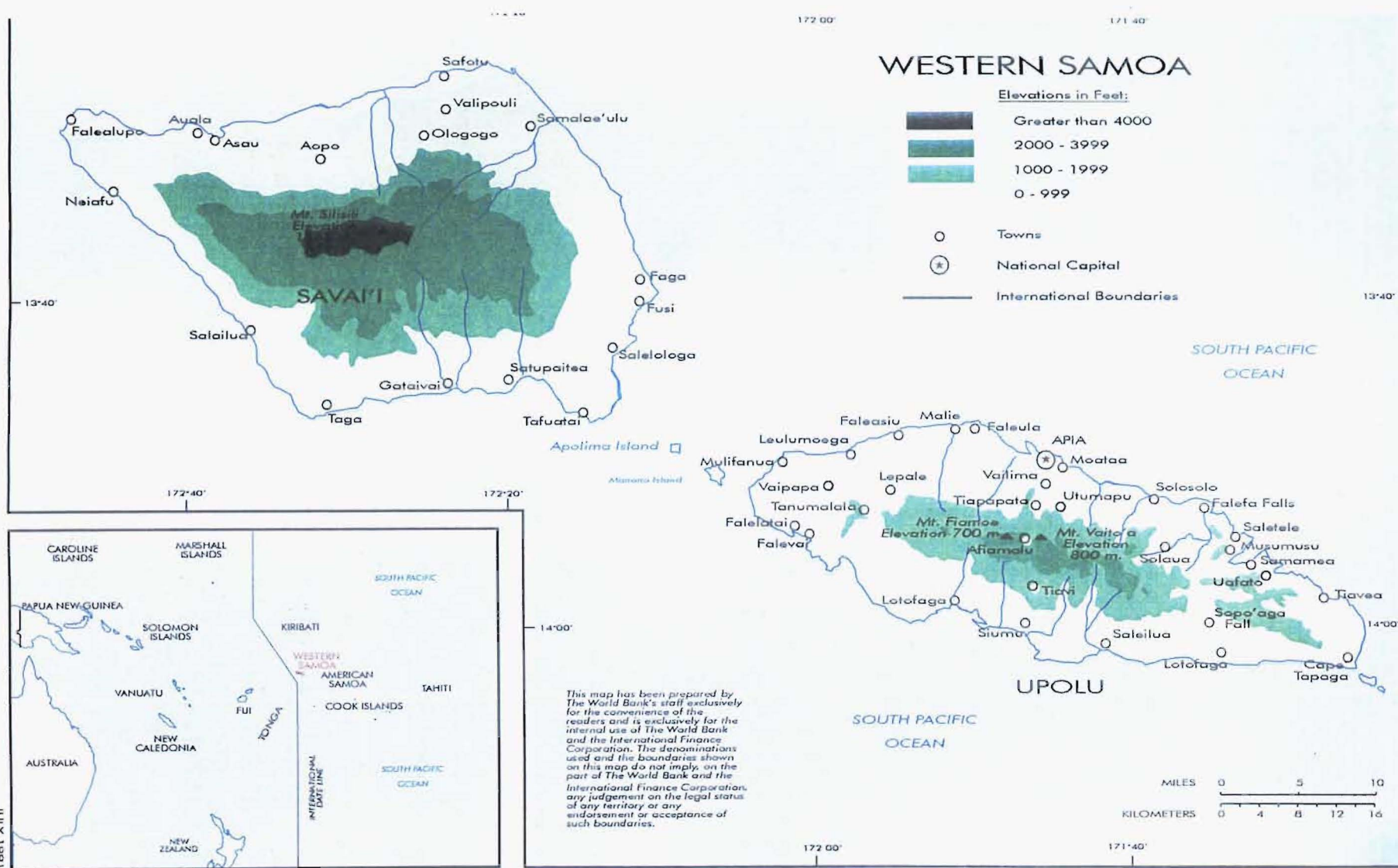
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Contents

	Page
Abstract	ii
Acknowledgements	iii
Map of Samoa	iv
Contents	v
List of Tables	vi
List of Figures	vii
Abbreviations and Acronyms	viii
 Chapter 1 Introduction	 1
1.1 Introduction	1
1.2 Research Problem and Justification	1
1.3 Research Objectives	3
1.4 Organization of Thesis	4
 Chapter 2 Samoa's Agricultural Sector	 5
2.1 Introduction	5
2.2 Physical and Demographic Characteristics, Population and Emigration	5
2.3 Government and Economy	6
2.3.1 Economic Structure and Performance	8
2.3.2 Economic Recovery	8
2.3.3 Government Receipts and Expenditure	9
2.4 Land Ownership	10
2.5 Agricultural Sector	10
2.5.1 Agricultural Extension	11
2.5.2 Agricultural Inputs	15
2.5.3 Agricultural Credit	16
2.6 Strategies for Economic Reform and Restructuring	17
2.6.1 Sector Priorities	18
2.6.2 Public Sector Efficiency	18
2.6.3 Private Sector Development	18

2.6.4	Human Resource Development	19
2.6.5	Environment	19
2.6.6	Development Prospects	19
2.7	Chapter Summary	19
Chapter 3	Literature Review	21
3.1	Introduction	21
3.2	The History and Development of Agricultural Extension	21
3.2.1	Role of Agricultural Extension in Agricultural Development	22
3.2.2	History and Development of Diffusion/Adoption of Innovation	23
3.2.3	Importance of Diffusion and Adoption of Innovation	24
3.3	Effective Agricultural Extension	27
3.3.1	Strong Policy Commitment	27
3.3.2	Adequate Infrastructure	27
3.3.3	Appropriate Extension Approaches and Programmes	28
3.3.4	Appropriate Extension Methods	28
3.3.5	Appropriate Training Materials	29
3.3.6	Education and Training	29
3.3.7	Strategies for Reaching Women Farmers	29
3.3.8	Monitoring and Evaluation of Extension Programme	29
3.4	Top-Down Approaches to Agricultural Extension	30
3.4.1	General Agricultural Extension Approach	30
3.4.2	Integrated Rural Development Project (IRDP) Approach	31
3.4.3	Training and Visits (T & V) Approach	32
3.4.4	Lessons Learned From the Past Experiences	35
3.5	Bottom-Up Approaches to Agricultural Extension	35
3.5.1	Farming Systems Development (FSD) Approach	36
3.5.2	Community Development (CD) Approach	38
3.6	Women and Extension	42
3.6.1	Women in Development (WID) Approach	42
3.6.2	Gender Sensitive Approach (GSA)	43
3.7	Public vs Private	44
3.8	Sectoral Participation in Agricultural Extension Systems	47
3.8.1	Public Cost Recovery Systems	47
3.8.2	Private Extension Systems	48

3.8.3	Impact of Privatized Extension Services	50
3.8.4	Lessons Learned From Privatization	50
3.8.5	Conclusion	51
3.9	Chapter Summary	52
Chapter 4	Research Methodology	53
4.1	Introduction	53
4.2	Theoretical Concept and Research Methodology	53
4.2.1	Survey Approach	54
4.2.2	Case Study Approach	55
4.3	Research Tools	58
4.3.1	Exploratory Stage	58
4.3.2	Profiling Stage	59
4.3.3	Interview with Officials	61
4.4	Research Techniques	62
4.4.1	Site and Sample Selection	62
4.4.2	Pilot Study	63
4.4.3	PRA Procedure for Village Case Study	64
4.4.4	Data Analysis	66
4.4.5	Limitations, Strengths and Research Bias	67
4.5	Chapter Summary	68
Chapter 5	Research Results	69
5.1	Introduction	69
5.2	Perceptions of Policy makers	69
5.2.1	Efficiency of the MAFFM's Extension Service	69
5.2.2	Alternative Systems of Agricultural Extension	70
5.2.3	Promotion of Private Extension	71
5.2.4	Privatisation of ASC and Elimination of Subsidies	72
5.2.5	Development of Commercial Agriculture	73
5.3	Impact on Four Village Development	74
5.3.1	Siufaga Village: Case Study 1	74
5.3.1.1	Agricultural Commercialisation	75
5.3.1.2	Crop Diversification and Sustainable Farming Systems	76
5.3.1.3	Increased Livestock Production	77

5.3.1.4	Community Development	77
5.3.1.5	Revival of Traditional, Cultural and Religious Values	78
5.3.1.6	Higher Household Income	78
5.3.1.7	Farmers' Self-Reliance and Education	79
5.3.1.8	Women and Agricultural Activities	79
5.3.2	Identification of Factors Influencing the Technology Adoption	80
5.3.2.1	Land Shortage and Ownership	80
5.3.2.2	Socio-economic and Development Level	81
5.3.2.3	Market Availability and Characteristics	81
5.3.2.4	Community Participation	82
5.3.2.5	Availability of Adequate Resources & EO's Accountability	83
5.3.3	Summary	83
5.4.1	Samalaeulu Village: Case study 2	84
5.4.1.1	Agricultural Production and Food Security	84
5.4.1.2	Soil Conservation and Cost-Effective Farming Systems	85
5.4.1.3	Community Development	85
5.4.1.4	Alternative Sources of Income	86
5.4.1.5	Community Involvement	87
5.4.1.6	Status of Women	87
5.4.2	Identification of Factors Influencing the Technology Adoption	88
5.4.2.1	Land Dispute and Ownership	88
5.4.2.2	Samoan Way of Life "Collective System"	88
5.4.2.3	Market Characteristics and Socioeconomic Development Level	88
5.4.2.4	Transport and Marketing	89
5.4.2.5	Community Participation and EO's Accountability	89
5.4.3	Summary	90
5.5.1	Malaemalu Village: Case Study 3	91
5.5.1.1	Lower Agricultural Development	91
5.5.1.2	Sustainable Traditional Farming System	92
5.5.1.3	Community Development	92
5.5.1.4	Employment Opportunities, Revival of Christian Faith and Cultural Values	93
5.5.2	Identification of Factors Influencing the Technology Adoption	94
5.5.2.1	New Access Road Scheme	94
5.5.2.2	Socio-economic Development Level and Business Profile	94

5.5.2.3	Community Involvement & Efficiency of Extension Service	95
5.5.2.4	Land Ownership and Access to Government Services	95
5.5.3	Summary	96
5.6.1	Taelefaga Village: Case Study 4	97
5.6.1.1	Agricultural Development and Crop Diversification	97
5.6.1.2	Community Development	98
5.6.1.3	Employment Opportunities for Rural Youths & Self-Reliance	99
5.6.1.4	Women in Development and Family Group Approach	99
5.6.1.5	Promotion of Private Extension	100
5.6.2	Identification of Factors Influencing the Adoption of Technology	100
5.6.2.1	Efficiency of Extension Service and EO's Accountability	100
5.6.2.2	Leadership and Handling of Funds	101
5.6.2.3	Socioeconomic development Level & Commercial Opportunity	102
5.6.2.4	Transportation Costs and Access to Government Services	102
5.6.2.5	Land Ownership and Group Formation	102
5.6.2.6	Other Financial Supports	103
5.6.3	Summary	103
5.7	Chapter Summary	104
Chapter 6:	Discussion	105
6.1	Introduction	105
6.2	Past Trend in Samoan Agricultural Extension	105
6.3	Present and Future Trend in Samoan Agricultural Extension	108
6.3.1	Search for Other Systems of Agricultural Extension	108
6.3.2	Private Extension Development	110
6.3.3	Restructuring and Strengthening of MAFFM's Extension Service	112
6.3.4	Abolition of Government Incentives and Subsidies	114
6.3.5	Promotion of Agricultural Commercialisation	116
6.4	Community Development Activities	117
6.4.1	Villages in Low Community Development	118
6.4.2	Villages with High Community Development	121
6.5	Divergence in Socio-economic Development	123
6.5.1	Women in Low Income Enterprise	123
6.5.2	Women in High Income Enterprise	125
6.5.3	Sense of Empowerment, Confidence and Reliance	126

6.6	Community Needs	127
6.6.1	Community Development	127
6.6.2	Rural Infrastructure and Institutional Development	129
6.7	Conclusion	131

Chapter 7: Conclusion and Recommendations **135**

7.1	Introduction	135
7.2	Community Participation Strategies	136
7.3	Strategies for Community Agricultural Training	138
7.4	Strategies for Enhancing Women's Participation	139
7.5	Strategies for Marketing and Market Development	142
7.6	Rural Infrastructure and Institutional Development	142
7.7	Institutional Strengthening	143
7.8	Government Incentives and Subsidies	145
7.9	Some Possible Alternative Extension Systems	146

Bibliography **147**

Appendices

1.	Calendar of research activities, location, and representatives of organisations interviewed in Samoa, on 1st July - 9th August and in New Zealand	155
2.	Semi-structured questionnaire (checklist) for policy makers interviews and village case studies	158
3.	Village profile - population, households, social services, MAFFM's Programmes	162
4.	Biophysical data of individual farmers (households) from four villages	163
6.	Location of Villages for Case Studies	165

List of Tables

Table	Page
1. Balance of payments	9
2. DBWS loan approvals to the agricultural sector, 1980-90	17
3. Farm characteristics - farm holdings, farm size, farm types and arable land	77
4. Household income, household and farm expenditure	79
5. Time spent on farm, labour sources, occupation, decision makers	80
6. Major constraints, prioritised farming activities and peoples' needs	81
7. Farm characteristics - farm holdings, farm size, farm types and arable land	85
8. Household income, household and farm expenditure	86
9. Time spent on farm, labour sources, occupation, decision makers	87
10. Major constraints, prioritised farming activities and peoples' needs	89
11. Farm characteristics - farm holdings, farm size, farm types and arable land	92
12. Household income, household and farm expenditure	93
13. Time spent on farm, labour sources, occupation, decision makers	94
14. Major constraints, prioritised farming activities and peoples' needs	94
15. Farm characteristics - farm householdings, farm size, farm types and arable land	98
16. Household income, household and farm expenditure	99
17. Time spent on farm, labour sources, occupation, decision makers	100
18. Major constraints, prioritised farming activities and peoples' needs	101
19. Village community development needs	130
A1 Village profile - population, households, social services, MAFFM's programmes	162
A2 Biophysical data of individual farmers of four villages - education, work experience, agricultural training, business	163
A3 Biophysical data of individual farmers from four villages - age, martial status, children, number in household, house type and occupation	163

List of Figures

Figure	Page
1. Real gross domestic product by industry 1994	7
2. Organisational structure of the MAFFM's agricultural extension service	12
3. First generation extension model - transfer of technology	25
4. Second generation extension model - meeting their agendas	26
5. Third generation extension model - creating independent learners	27
6. Outline of research methodology	59
7. Budgetary allocations to MAFFM and Extension Division	109
8. Modified Agricultural Extension Systems for Samoan farmers	141
9. Proposed Organisational Structure of the MAFFM's Agricultural Extension Division	144

Abbreviations and Acronyms

AED	Agricultural Extension Division
AO	Agricultural Officer
ASC	Agriculture Store Corporation
ADB	Asian Development Bank
AusAID	Australian Assistance for International Development
CAO	Chief Agricultural Officer
CBOs	Community Based Organisations
CD	Community Development
CCC	Congregational Christian Church
DLSE	Department of Lands, Surveys and Environment
DBWS	Development Bank of Western Samoa
DA	Director of Agriculture
EU	European Union
EO	Extension Officer
FSD	Farming Systems Development
FSP	Farming Systems Project
FAO	Food and Agricultural Organisations
GAE	General Agricultural Extension
GSA	Gender Sensitive Approach
GDP	Gross Domestic Product
GNP	Gross National Product
IRR	Internal Rate of Return
IRDP	International Rural Development Project
MAFFM	Ministry of Agriculture, Forests, Fisheries and Meteorology
MIA	Ministry of Internal Affairs
MWA	Ministry of Women Affairs
NARS	National Agricultural Research System
NPF	National Provident Fund
NZODA	New Zealand Overseas Development Assistance
NGOs	Non Governmental Organisations
PRAP	Pacific Regional Agricultural Programme

PLA	Participatory Learning Action
PRA	Participatory Rural Appraisal
Pers. Com	Personal Communication
PSC	Public Service Commission
PWD	Public Works Department
RRA	Rapid Rural Appraisal
R & D	Research and Development
SAO	Senior Agricultural Officer
SDA	Seventh Day Adventist Church
SES	Statement of Economic Strategy
SOEs	State Owned Enterprises
SMSs	Subject Matter Specialists
T & V	Training and Visits System
TLB	Taro Leaf Blight
USP	University of the South Pacific
VAGST	Value Added Goods and Services Tax
WSTEC	Western Samoa Trust Estate Corporation
WIB	Women in Business
WID	Women in Development

1.1 Introduction

The role of government funded extension in the socio-economic development has been increasingly challenged in recent years by many people, especially the policy makers. This is due to high costs associated with the provision of such services to the agricultural sector which are economically difficult to justify. Hence, many countries have significantly restructured or even privatised their agricultural extension services. This research, therefore, addresses the question of what form of extension is most appropriate for Samoa. From a socio-economic perspective, it explores the policy makers and farmers' past experiences with agricultural extension in Samoa. It then considers what is required to improve the service to farmers within the framework of government's economic rationalisation policies.

1.2 Research Problem and Justification

Undoubtedly, many countries have learned lessons from their past experiences with their centralised and fully subsidized "*top-down*" extension approaches. The cost of these systems has contributed to the difficult financial situation of many developing countries governments. According to literature, these extension systems are, in fact, far too expensive to be sustainable, demanding more financial support with limited farmer participation in decision making process. As a consequence, some countries have adopted the "*bottom-up*" extension approaches to incorporate the socio-economic issues in decision making process and reduce the government spending and intervention. Although farmers and policy makers fully participate in democratic consultations and negotiations, such approaches still demand financial support from government and donor agencies. All these systems still aggravate the country's budget deficits and accumulated foreign debts (Ameur, 1994; Umali and Schwartz, 1994).

Over the last two decades, some countries (e.g. New Zealand, Netherlands, Chile) have adopted the private extension systems due to the growth of agricultural commercialisation as part of macroeconomic reform and economic restructuring. Government intervention in extension activities has occurred through lower operating

expenses of extension, abolition of price supporting systems, import duties on farm inputs and export taxes, and elimination of subsidies in favour of more incentives to investment. The governments role has been to concentrate upon policy making, human resource development, infrastructure development and environmental issues. There are, however, concerns that privatization of extension could impose the socio-economic costs upon rural communities. The extension service provided by private sector in these countries has, fortunately, been effective and affordable (Ameur, 1994; Milligan, 1994; Antholt, 1994).

In Samoa, over the last four decades, the Government has spent approximately WS\$8 million to strengthen the Ministry of Agriculture, Forests, Fisheries and Meteorology (MAFFM)'s extension function through the introduction of various systems, in particular, the Training and Visits (T & V) system but there is limited indication of financial sustainability and achieving farmers' needs (Leonard and Ooi, 1995)¹. Although some modifications of the T & V system were made to suit local circumstances, in mid 1988, the T & V system was temporarily suspended due to financial constraints. In 1994, the T & V system was remodified by Food Agriculture Organisation (FAO) consultants in favour of contact with *farmer groups instead of contact farmers* (Lubett, 1997²). Meanwhile, the T & V system and Farming Systems Development (FSD) approach has been incorporated to improve the technology transfer but the question to ask "Is this manoeuvre financially sustainable in the long run".

Despite all past efforts, extension service has been perceived as not having made any significant impact on rural lives. According to pilot survey conducted by MAFFM staff in 1996, extension service is ineffective and farmer participation rates are low. The lines of management control are vague. Staff have low qualifications and low levels of training input that affect staff morale and motivation among staff (Lubett, 1997). Additionally, there are number of weaknesses in the MAFFM's organizational structure. The Ministry has weaknesses in the way it performs its function, for example, the delivery of extension service to farmers is unreliable and ineffective (Leonard and Ooi, 1995; Burrows et al, 1991).

The Samoan economy has suffered from falls in world market commodity prices and natural disasters such as taro leaf blight (TLB) disease and cyclones. The great devastation of agriculture sector by two consecutive cyclones in 1990-91 respectively has, however, resulted in low agricultural exports and reduced overseas earnings.

¹ ADB Consultants who conducted the six weeks study on Agriculture Sector Review in Samoa to assist the government in the formulation of macro-economic and sectoral reform policy measures for developing of commercial agriculture by the private sector.

Because of these natural disasters, government has borrowed from international markets for rehabilitation work that aggravates its current external debts, despite the slight decline in budget deficits (Johnson and Dhal, 1997³).

Because of the current budgetary constraints, the government has reduced budgetary allocations to MAFFM and Extension Division in compliance with its new Output Performance Budget system. Government has committed to utilise its limited financial resources more efficiently and productive as to achieve the expected output performance. Hence, the new budget system has questioned the effectiveness and efficiency of MAFFM's extension service. Number of extension officers, for example, have been reduced through Treasury expenditure cuts. Few studies have so far been conducted to look for the best system of agricultural extension for farmers while reducing government spending (Lubett, 1997).

Accordingly, the government is exploring other options for agricultural extension (Lubett, 1997) and intends to privatise the Agriculture Store Corporation (ASC) prior to the elimination of all subsidies (Leonard and Ooi, 1995). Coincidentally, the government has a policy of encouraging private sector growth, seeking privatization of public enterprises and attracting more foreign investors to the country (Johnson and Dhal, 1997; GWS, 1995).

1.3 Research Objectives

The purpose of this study is to investigate alternative strategies for agricultural extension through consultation with the policy makers and farmers, using a survey and case study approach. This research aims to investigate Samoan people's experiences with, and general perceptions towards, the MAFFM's extension service. The research will also assess the impact of the MAFFM's extension programmes on rural people's life and identify the factors influencing the adoption of technology and people's views on ways of improving the MAFFM's extension service. This will be used to develop recommendations for a more appropriate system of agricultural extension which meets the farmers' needs and is financially sustainable in terms of government spending. The results will assist policy makers in designing more effective extension systems in the future.

² Field extension specialist from AusAID Farming Systems Project who conducted a research in 1997, on a New Vision for Agricultural Extension in Samoa.

1.4 Organisation of Thesis

The organisation of this thesis is as follows: Chapter 2 reviews the Samoa's⁴ Agriculture Sector and other factors that affect the agricultural development such as physical and demographic characteristics and socio-economic aspects of the country. This chapter highlights the problem with which the current government is confronted of budgetary deficits and accumulated external debts. Chapter 3 reviews the theoretical concept of extension and diffusion of innovation as well as past, present and new trends in agricultural extension. This chapter also reviews the reasons why many countries have moved towards new forms of extension including privatisation. Chapter 4 outlines the emergent process of the research methodology. The conceptual framework identifies the parameters for the research. Chapter 5 presents the results of the study. Chapter 6 discusses the implications of what form of extension is most appropriate for Samoa. Chapter 7 outlines the research conclusion and recommendations to meet farmers' needs while meeting government's target of reduced spending.

³ First Bank of Hawaii's economic report, series on the Pacific Island economies which reviews present economic conditions; considers Samoa's prospects in the years ahead and provides the information and analysis necessary for informed decision-making by Samoans and investors abroad.

2.1 Introduction

This chapter reviews the Samoa's Agricultural Sector and other factors that affect the agricultural development in Samoa such as physical and demographic characteristics, and socio-economic aspects of the country. Importantly, this chapter highlights the problem which confronts the current government of budgetary deficits and accumulated foreign debts. These budgetary constraints have reduced the effectiveness and efficiency of the MAFFM's extension function.

2.2 Physical and Demographic Characteristics, Population and Emigration

Samoa consists of two main islands, namely Upolu and Savaii with total land area of 2,836 km². The country is of volcanic origin and has a considerable flat areas, for growing crops and raising livestock. Subsistence agriculture is the economic mainstay. It has tropical climate with temperatures ranging 25-30 °C, and November - April is a rainy season. Fragile soil structures make the islands vulnerable to environmental damage by soil erosion which is exacerbated in agricultural production systems where shifting agriculture is practiced. Soils are rocky and strewn with boulders, and the scope for mechanization is therefore limited⁵. The Samoan chain of islands lies in the path of South Pacific's fiercest hurricanes, two of which, Ofa (February 1990) and Val (December 1991) caused a massive devastation to land, farm and infrastructure and the whole economy (Johnson and Dhal, 1997). Islands are endowed with specular scenery and landscape, historic sites, unique forests and wild life. These attributes coupled with traditional culture make the island a desirable tourist destination (Taulealo, 1993). Samoa has a total population of 170, 000 with a growth rate of 0.5 - 0.6% due to heavy emigration, particularly to New Zealand. New Zealand has an estimated Samoan population of 150,000 almost equal the number of those living at home. Remittances from emigrants contribute significantly to the country's foreign exchanges and preserve the traditional extended family. Emigration, while it has reduced the economic pressure also causes the "*brain drain*" (Johnson and Dhal, 1997).

⁴ Formerly known as Western Samoa

2.3 Government and Economy

In the 1960-70s, the national economy was characterised by low productivity, low growth and a dominant public sector. During the 1980s, economic growth was modest. The real GDP increased by an annual average of 2% during 1982-89 while population grew at 0.6% per annum (Fairbairn, 1991). The Government has confronted economy instability as a consequence of world market recession which affected its major agricultural exports (Burrows et al, 1991⁶). Cyclone devastation in the early 1990s was a major setback to Samoa's economic effort. Infrastructure, agriculture and housing were severely damaged and real GDP fell by an estimated 5%. Rehabilitation work significantly contributed to a large fiscal deficit. The Government formulated the macro-economic, fiscal and monetary policy package to restore the economy stability as part of its economic restructuring and reform (Fairbairn, 1991). Government economic policies are now aimed at promoting the private sector as the engine of economic growth; seeking partnership with private sector to create a competitive and efficient economy; creating a "*level playing field*" on which local and foreign investors compete with the public sector; increasing resources for education and health, and increasing production in villages through an increase in productivity of land, labour and diversification (Leonard and Ooi, 1995 also cited in GWS (1995; 1997)).

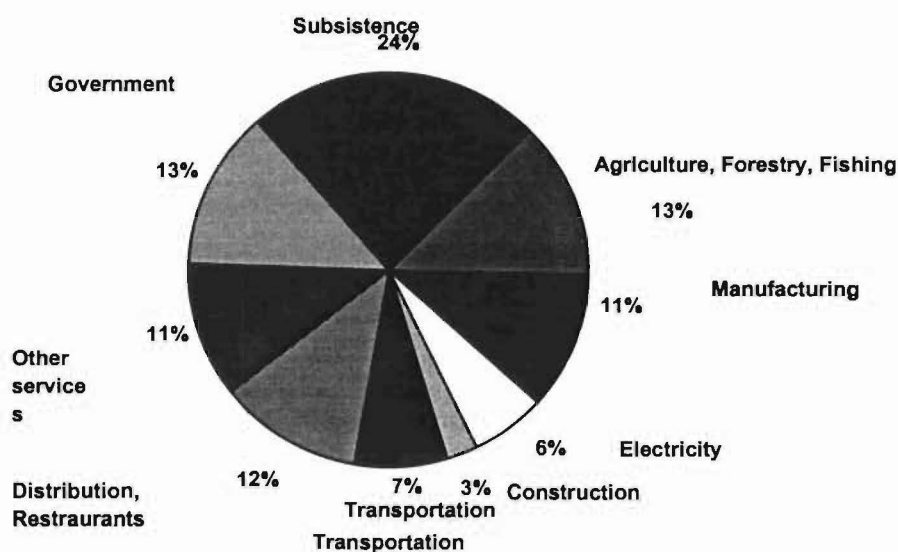
The government was elected in April 1991 with a clear mandate to encourage private sector growth, seek privatization of public enterprises and attract more foreign investors to the country (Johnson and Dhal, 1997). The implementation of these measures is seen as a critical step towards a more open and market-driven economy to achieve sustainable economic growth. However, such growth can be slowed because of the strength of traditional *faa-samoa* (Samoan way of life) and limited natural resources. The village life and land is controlled by village fono (matai) who practice the *reward collective system*, rather than individual effort, which inhibits the economic evolution (Johnson and Dhal, 1997; Burrows et al, 1991).

⁵ Wright, A.C.S, soil scientist and pioneer of studying the Soils and Land Use of Western Samoa in the 1960s cited in ADB (1990). Land Resource Planning Study Western Samoa, ANZDEC Ltd Consultants, DSIR, New Zealand.

⁶ World Bank review of the Samoa Agriculture Sector in response to immediate reconstruction needs with emergency assistance following the Cyclone Ofa in 1990 which inflicted severe damage on country's infrastructure and agricultural sector. The report proposes a broad development strategy for Samoan Agriculture.

According to Johnson and Dhal (1997), per capita gross domestic product (GDP) is US\$1000, putting Samoa near the bottom of 40 middle-income countries (with GDP ranging from US\$700 to US\$3000). Social indicators show that education levels and adult literacy are high and life expectancy is also high at 67 years. Subsistence agriculture, including forestry and fishing, provides sustenance to 60% of the population. In 1994, agriculture represented 36.8% of GDP, manufacturing 11.2%, government 13.0%, transportation 7.4% and other services 22.9% (See Figure 1). There is a well developed money economy in operation, the Central Bank of Samoa regulates the money supply and implements monetary policy and commercial banks offer a range of personal and commercial financial services.

Figure 1: Real Gross Domestic Product by Industry 1994



Source: Adapted from Johnson and Dhal, 1997

Remittances play an important role in the economy through the provision of foreign exchange. In the last few years (1994-95), remittances increased from WS\$80.5 million in 1993 to WS\$83.4 million in 1994 and WS\$87.3 million in 1995 (average exchange rates for 1993, 1994 and 1995 were WS\$0.3894, WS\$0.3945 and WS\$0.4045 to the US dollar). However, there is some speculation that remittances may decline in the future because of alterations in Samoan expatriate's lifestyles. As remittances decline, the country will need other sources of foreign exchange to restore sustainable economic growth (Johnson and Dhal, 1997).

2.3.1 Economic Structure and Performance

Samoa is a small developing economy which depends largely upon subsistence farming and fishing. The major income sources are agricultural exports, remittances, foreign aid and tourism. While the manufacturing and industrial sectors are small, they prevent urban under-employment and are potentially an important income source (Johnson and Dhal, 1997). Over the last two decades, economic performance has been disappointing. In recent years, economic growth was adversely affected by the destructive cyclones of 1990-91, and the government designed an ambitious agenda to raise economic growth through privatization and economic diversification. Cyclone rehabilitation has aggravated the government budget deficits and foreign debts. In addition, financial losses of Polynesian Airlines in the early 1990s, estimated to be worth at least WS\$40 million (AusAID, 1995), seriously impacted upon the government's ability to accelerate the economic recovery. Fortunately, the airline was restructured and returned to profitability in 1996 (Johnson and Dhal, 1997). Since the country's population is small, the local market remains small. Islands are isolated and transportation costs are high. The roading system is good and a bus system is available but access to inland areas is difficult (Burrows et al, 1991). Skilled workers and modern technology are scarce. Samoa is politically stable and socially cohesive. Private sector expansion in both the industrial and services areas is slow.

2.3.2 Economic Recovery

In 1996, real GDP increased 7% as a consequence of doubling of agricultural exports and large gains in domestic food production, manufacturing, and tourism. Agricultural production was estimated to increase over 7%, the main crops being taro, taamu, banana, cocoa and coconuts. Copra exports are booming and new markets for kava exports have opened up. Government is willing to help agricultural producers and distributors so farmers can switch to higher value products. Taro leaf blight struck Samoa in 1993, taro exports declining to negligible levels with a small recovery for domestic consumption (Leonard and Ooi, 1995; Johnson and Dhal, 1997).

Fish domestic consumption increases are attributed to increases in the tourism industry and an increase in exports of bottom fish (albacore) to the American Samoa market (MAFFM staff, personal comm.). Industrial output has been increased as a result of gains in coconut oil production and copra, beer, cigarettes and coconut

cream. However, manufacturing is uncertain as a major source of income for the local economy because of recent changes in regional and global commerce and trade regulations. This uncertainty has encouraged the government to invest in the tourism industry, which has contributed significantly to the economy. Johnson and Dhal (1997):

[Tourist arrivals to the country were 67,860 in the first quarter of 1996 and expect to increase during the South Pacific Arts Festival. Foreign exchange earning attributable to tourism were at WS\$52 million, equal to overseas remittances. There is, however, a lack of adequate airlift and infrastructure such as hotels, restaurants, sports facilities and cultural exhibits that might decelerate the tourism industry in the future]

2.3.3 Government Receipts and Expenditures

Budget deficits in 1995-96, have declined to WS\$15 million (5% GDP) from WS\$38 million (11% GDP) in 1994-95. The deficit is expected to drop to WS\$5 million in the fiscal year 1996-97, and total revenues are expected to grow 7%, indicating a stronger economic performance (See Table 1).

Table 1: Balance of Payments (million tala)

Years	1993	1994	1995
Current Account, Net	-134.06	-45.59	-36.78
Merchandise trade, net	-247.17	-194.04	-206.36
Exports, fob	16.53	8.94	21.67
Imports, cif	-263.70	202.96	-228.05
Services and income, net	32.66	65.06	82.34
Private transfers, net	80.39	83.39	87.26
Capital Account, Net	113.35	30.43	44.88
Government, net	84.00	77.50	68.10
Official grant	44.80	60.20	61.80
Official loans, net	39.20	17.30	6.30
Government guaranteed loans, net	-0.70	-1.20	-1.20
Private capital, net	-	-35.30	-16.70
Other	30.05	-10.57	-5.32
Overall Balance	-20.71	-15.16	8.10
Valuation Change in reserves	0.86	3.18	3.07

Source: Adapted from Johnson and Dhal, 1997.

This growth is expected from import fees and excise and other taxes while income tax collections remain stable. Tax reforms will streamline import taxes and promote tax tariffs along with a demand for the institutional reform. The aim is to run government more efficiently and productively while expanding the private sector. The current level of overall balance of payments is low but Samoa's external debt of WS\$389 million is high (Johnson and Dhal, 1997).

2.4 Land Ownership

Customary land dominates land tenure, accounting for 81% of all land, followed by government land at 11% and freehold at 3%. The remaining 5% belongs to the Western Samoa Trust Estates Corporation (WSTEC) some of which, under government privatization programme, has been sold or leased to private users. The government has a right to exchange of land for public purposes, ranging from plantations, national reserves and industrial purposes. The government land at Vaitele, for example, is being used by Yazaki Samoa, Japanese automotive company. O'Meara (1987) indicated that customary land belongs to the extended family through a mix of titles and ancestral transfers and controlled by village matai, land can neither be transferred to others nor turned into freehold unless a consensus is reached. This has caused land disputes within and outside families and villages and that has hampered the interests of foreign investors. However, following the recent review of Land Legislation Act, customary land can be leased (Leonard and Ooi, 1995; Johnson and Dhal, 1997).

2.5 Agricultural Sector

Agriculture, including forestry and fisheries, is the largest sector of the economy. In 1994, agriculture contributed 40% of GDP, 60% of employment and 80% of export earnings. In 1995, subsistence farming (primarily taro, coconut, coconuts and bananas) made up 24% of GDP as compared with a 13% share for both domestic and export markets (Leonard and Ooi, 1995). Export crops include coconuts, cocoa, banana and others - root crops and vegetables. Agriculture loss by cyclones is estimated at WS\$200 million which accounts 57% of GDP until 1995 when coconut production began to recover again (Lubett, 1997).

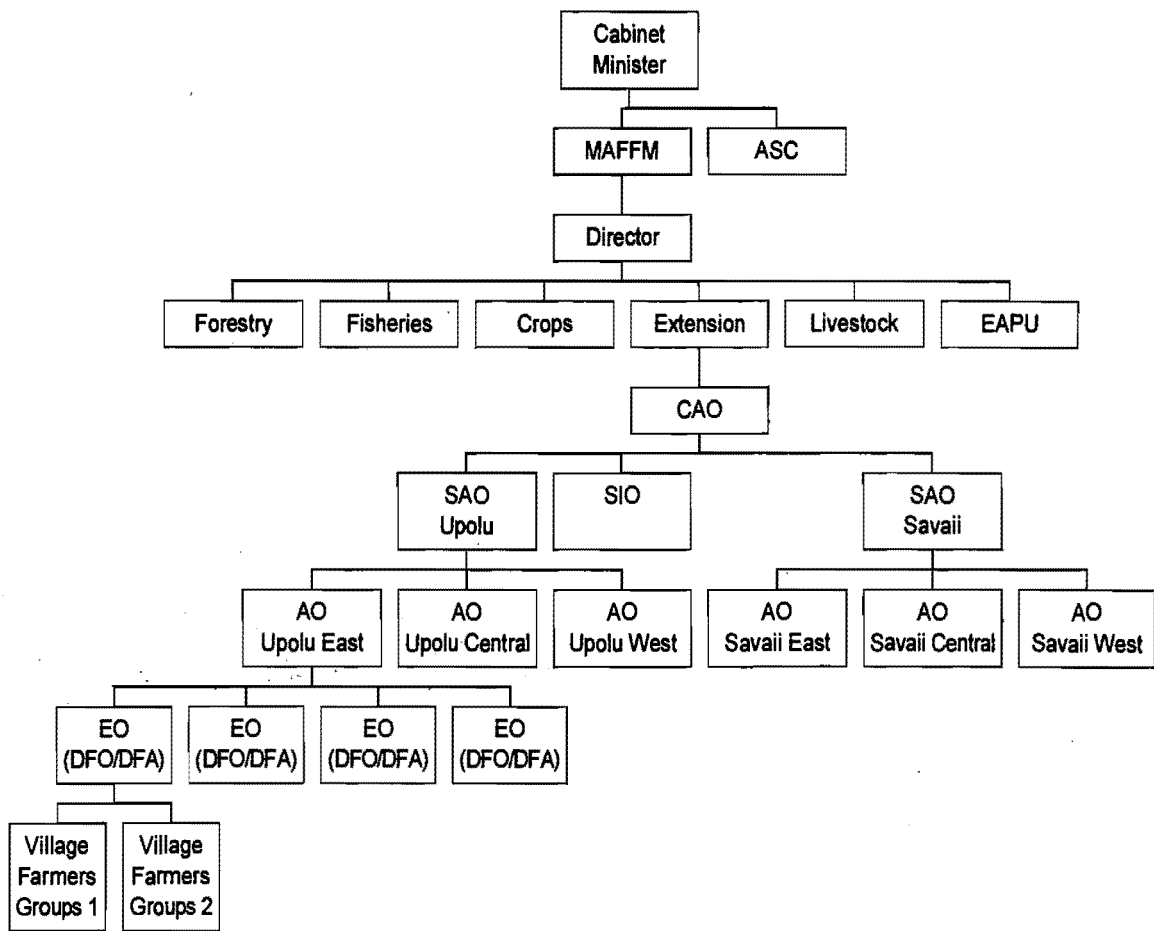
Commercial agricultural production is primarily undertaken by semi-subsistence farmers, with few fully commercial producers. Farming systems are closely linked to the traditional social system and are fundamentally agroforestry systems, based on root crops (taro, taamu, yams, taro palagi) which are grown under coconuts (dominant crop) and other trees (banana, breadfruit, cocoa and coffee) for food and cash. Root crops are intercropped with vegetable under a fallow system.

The Agriculture Sector has subsectors that include forests, fisheries, livestock and crops. The livestock, sub-sector is mainly composed of pigs and poultry which is village based, and cattle farming which is dominated by WSTEC. Fishing is an important occupation in the village economy and provides a major source of protein food and cash income. Forestry has become an important export industry and provides building material and firewood. In the sequence of land development and use in villages, forest lands are first cleared and then followed by food crops for three seasons before perennial crops are planted (GWS, 1990). This farming system needs few purchased inputs and limited labour and is basically for home consumption and domestic markets. Several past studies (ADB, 1985; Burrows et al, 1991; Leonard and Ooi, 1995) have advocated that a good strategy is to preserve the traditional farming systems approach and to counter potential threats to the sector's sustainability, particularly the overuse of herbicides and uncontrolled cultivation of forest land. Additionally, under the macroeconomic reform and restructuring, marketing boards have been abolished in favour of the Department of Industry, Commerce and Trade (DICT) to support the private entrepreneurs (Leonard and Ooi, 1995).

2.5.1 Agricultural Extension

The Agriculture Extension Service (AED) is a division of the MAFFM, responsible for direct contact with farmers throughout the country. The division comprises two main sub-units: (a) The island of Upolu, having a Senior Agricultural Officer (SAO), three Agricultural Officers (AO) each responsible for a region (Upolu East, Upolu Central, and Upolu West), and eighteen district field officers (DFO) or district field assistants (DFA); (b) The island of Savaii, with one SAO, three AOs (Savaii East, Central and West), and fourteen district extension officers. Heading the whole AED is the Chief Agricultural Officer (CAO) reporting directly to the Director (D.A.). Within the MAFFM, there is a Information and Communication Section (ICS) headed by the Senior Information Officer (SIO) which is the service arm of the Extension Division and operate under the CAO's control. The ICS is responsible for gathering, processing and disseminating agricultural information to farmers through the extension officers and radio programmes. The Ministry has several other divisions (Fisheries, Livestock, Forestry and Crops) that each run their own extension services (See Figure 2) but they are perceived as being ineffective and exhibit poor use of limited resources (Leonard and Ooi, 1995 also cited in Lubett, 1997).

Figure 2: Organisational Structure of the MAFFM's Agricultural Extension Service



The basic organization of the Agricultural Extension Service was established in the 1950s. The first decentralization was initiated in 1960s with intention of bringing the extension service near to farmers (Rehman, 1984⁷ also cited in Imo (1985)). In the 1970s, donor agencies made significant efforts to strengthen the research and extension service. In 1984, the T & V system was introduced by Asian Development Bank (ADB) loan-funded project but there was concern on its sustainability beyond the project life (Foo, 1989; 1994). Wendt (1985) noted that the system was improved through the upgrading of the staff's capabilities and physical facilities (houses), and the procurement of equipment (transport). The AED, however, was the weakest division in the Ministry. The division did not have programmes or professional staff capable of mounting an extension programme designed to modernise agriculture due to inadequate planning and coordination of research and extension activities,

⁷ UNV- Agricultural Economist who conducted a series of surveys to monitor and evaluate the Agricultural Extension Programme in Samoa in 1983 - 84.

difficulty in recruiting qualified staff because of low qualifications, inadequate station facilities, and limited transportation. Of the actual 32 established positions, 30% were vacant at times in 1984 as the government adopted the “sinking-lid policy”(also cited in Standby (1985)). Despite these past efforts, the system is fragmented, largely commodity oriented, and often driven by externally-assisted projects. None of these attempts have improved the effectiveness of extension service to achieve farmers’ needs and financial sustainability (Lubett, 1997).

Few modifications to the T & V system were made to suit local circumstances, and in mid 1988 the T & V system was temporarily suspended. In 1994, the T & V system was remodified by Farming Systems Project (FSP) in favour of contact with *farmer groups* instead of *contact farmers* (Lubett, 1997). The FSD approach introduced by FSP, adopted Rapid Rural Appraisal (RRA)/Participatory Rural Appraisal (PRA) techniques, has been used to improve the technology transfer. The FSP has contributed substantially to recovering national agricultural production following the natural disasters (cyclones, Taro Leaf Blight (TLB) disease) by facilitating the introduction of crop diversification technology, accelerating agricultural commercialisation, and developing institutional and human resources (Retzlaff, 1995). Extension methods are channelled through group discussions, village meetings or community based organizations, farm walks and mass media. The FSD approach has been found successful in organizing farmers’ groups, adopting “*cliented centred approach*”, “*whole farm approach*” or “*participatory approach*” through the community based organizations (CBOs) such as village society, women’s’ committees, farmers groups and youth clubs (Lubett, 1997; Wood, 1997). However, this “*community development*” approach has been criticised as being unsustainable because of wrong incentive schemes (material gifts and free labour) to induce the community participation (O’Meara, 1994).

A general agricultural extension approach is still visible for emergency cases through mass media (leaflets, newsletters and radio). Radio programmes are broadcast weekly by the ICS. However, despite all these efforts, extension service has not made any significant impact on rural lives and farmer participation rates are low (Leonard and Ooi, 1995). The lines of management control are vague. There has been wide disparity in the size of districts and in workloads. Staff have low qualifications and low levels of training input affect staff morale and motivation among staff. Only a few staff have degrees, others have diplomas from University of the South Pacific

(USP), Alafua and the rest have formal secondary school qualifications (Lubett, 1997). Additionally, there are a number of weaknesses in the organizational structure of MAFFM. The Ministry has weaknesses in the way it performs its function. For example, the delivery of extension services to farmers is unreliable and ineffective (Leonard and Ooi, 1995; Vaai, 1997). Government budgetary constraints have reduced effectiveness and efficiency of the service.

Because of the current budget constraints, government policies which work against rural producers, for example, the removal of incentives or imposition of taxes, have been implemented. The output performance budget system, as part of the public sector reform, has been launched to allocate and utilise the government's limited resources more efficiently. The Government has departed from an overall comprehensive development plan following expiry of the last DP7 period (1992-94) and has adopted a succinct statement of overall policy, the Statement of Economic Strategy (SES) which is issued annually as a forerunner to the budget (GWS, 1995; 1997).

[The SES emphasises the principal means of improving efficiency by allowing free market competition; rationalisation of the Public Service is necessary with more clearly defined career paths, accountability strengthened middle management and appropriate incentives; maximisation of private sector's role in the economy. New budget system identifies budget estimates and performance reports focussing on planned outputs rather than on input alone (Leonard and Ooi, 1995). Consequently, budgetary allocations to MAFFM and Extension Division have been reduced dramatically. Extension Division budget was reduced from WS\$360,000 to WS\$325,000 in 1993/94 despite slight increases from WS\$375,312 in 1994/95 to WS\$391,083 in 1996/97. For example, extension officers have been cut down from 31 to 24 staff through Treasury expenditure cuts (Lubett, 1997)]

Although the extension service is still centralized and fully funded, the Government is exploring other options for agricultural extension (Lubett, 1997). Recent studies by Leonard and Ooi (1995) and Lubett (1997) have recommended alternative strategies for agricultural extension:

- *Firstly*, the extension service should be disbanded so rural producers use the informal services such as agro-processing, marketing firms, input suppliers or progressive farmers. There is, however, some speculation that the majority of rural households would lose contact with government development function, if extension officers were to be removed.
- *Secondly*, the private sector should be involved in reviving agricultural productivity and in obtaining better information for farmers' decision making. However, if the system is implemented, the agricultural production process must be separated from its social and cultural context.

- *Thirdly*, the cost recovery should be upgraded into a more professional service capable of levying charges for advisory services. This is however is questionable as in Samoa, it is difficult to collect charges and many farmers could not afford the cost.
- *Fourthly*, to improve cost-effectiveness and public image, the “target progressive farmers” must pay for service and innovation will later diffuse to “less progressive farmers”.
- *Fifthly*, a system of Village Level Workers drawn from progressive farmers is one possibility. This system is operated successfully in other developing countries including the Solomon Islands but the spirit of voluntarism is not well developed in Samoa.
- *Sixthly*, another possible option is the improvement of mass media campaigns in persuasive communication but its success depends on careful timing of messages for seasonal farming activities. Such communications might impose a heavy burden upon MAFFM but fortunately, the group participatory type of communication is more cost-effective.
- *Seventhly*, one option is to upgrade the “Farm Household-Centred” approach. Moreover, the MAFFM need to share the responsibility with other government, non-government agencies and private sector. Leonard and Ooi (1995) suggest that, one alternative to frontline extension workers, involves a more indirect approach to technology transfer using a smaller group of technical specialists, based centrally or on research stations; and greater use of on-farm demonstration.

2.5.2 Agricultural Inputs

The government has provided grants and subsidies to selected crops and inputs as part of a long term agricultural strategy. However, the strategy has not worked, in fact, the result has been mostly negative.

Money invested in bonus payments had no impact on increasing crop production and that best incentive is the market price. Subsidies distort the price signals and investment decisions of farmers and place a greater burden on taxpayers and the rest of the society. Administration costs are high and create more dishonesty and corruption (ADB, 1985; Leonard and Ooi, 1995)

As mentioned in Burrows et al (1991), all subsidies have been channelled through the ASC, a state-owned enterprise and monopoly supplier and private firms have had difficulty in competing with the ASC. The ASC monopoly has hindered the private sector development and the performance of the ASC has been generally poor. In

1986, the ASC had accumulated losses of over WS\$1.6 million. Despite some improvement in recent years, helped by Japanese aid, the ASC has continued to face problems in stock control, high staff turnover and poor operational and financial procedures. Growers complain that ASC provides a limited range of inputs at higher prices than import price plus reasonable mark-ups, and compete with them in agricultural production and marketing (e.g. banana). Hence, these World Bank and ADB consultants during the previous agriculture sector reviews have recommended to privatise the ASC prior to elimination of subsidies which is consistent with new economic policy (also cited in Leonard and Ooi, 1995). However, the government has not yet finalised its decision due to some concerns about unaffordable production costs leading to serious social consequences. The scope of the private sector is limited (Johnson and Dhal, 1997) which might result in weak market competition penalising the low-income farmers. Rural population live in vulnerable conditions following the two consecutive cyclones in the early 1990s and coupled with the TLB outbreak and Value Added Goods and Services Tax (VAGST).

2.5.3 Agricultural Credit

The Development Bank of Western Samoa (DBWS) plays the leading role in providing credit to the agriculture sector along with three commercial banks, namely National Provident Fund (NPF), Samoa National Bank and Pacific Commercial Bank. NPF lend only small amounts to agriculture most usually to large producers or local entrepreneurs. Loan interest rates range from 8-16% but normally are 12%, compared to commercial rates of 16% (Burrows et al, 1991). The trend in numbers of DBWS loans to agriculture has been declining from a peak in the mid 1980s, while total value of loan approvals has been increasing in nominal terms (Table 2).

These trends indicate that individual loan approvals have been increasing in value. There is disillusionment with agriculture following cyclones and the collapse of the taro industry, and more attractive prospects for investment exist. The volume of lending has declined significantly as from 1991-94 (Leonard and Ooi, 1995). The DBWS has faced a problem of loan repayments and agriculture is normally regarded as risky business.

[Borrower's sweat equity should be high to avoid such problem, government need to readjust its lending policies for equity to ensure farmers are able to repay their loans. This would be done through capital market development, including the establishment

of a venture capital fund to facilitate business development across all sectors (Leonard and Ooi, 1995)]

Table 2: DBWS Loan Approvals to the Agricultural Sector, 1980-90

Years	Annual Loans to Agriculture		Amounts written Off (WS\$1,000)		
	No.	Amount (WS\$1,000)	Agriculture	Other	Total
1980	3,758	2,160	8	-	8
1981	1,410	2,238	15	-	15
1982	1,363	1,699	14	96	110
1983	1,932	3,619	2	-	2
1984	2,364	4,910	3	-	3
1985	1,612	16,799	609	633	1,242
1986	1,318	3,306	51	51	102
1987	1,302	4,751	554	370	924
1988	1,168	4,589	1,216	1,317	2,533
1989	941	4,242	1,106	557	1,663
1990	1,294	4,112	n.a.	n.a.	n.a.
<u>Total</u>	<u>18,462</u>	<u>52,425</u>	<u>3,038</u>	<u>3,024</u>	<u>6,602</u>

Source: Development Bank of Western Samoa

Fortunately, government is aware of these problems and is focussing on the development of agricultural commercialisation and the need for credit and access to land if farming is to grow. Attention is being directed to improved livestock production and distribution practices (Johnson and Dhal, 1997).

Forestry has suffered severely from cyclones, illegal cutting and land clearance for farming. Some damage has been irreparable, self sufficiency in timber is questionable. The new strategy calls for preserving certain forests and for developing plantation forestry, a long term proposition unlikely to produce immediate results. There is also government concern about soil erosion and a fragile environment that can affect domestic production and tourism (Johnson and Dhal, 1997). Fisheries contribute only 2% of GDP and 75% of production is for subsistence consumption. Government has made efforts to expand fishing and fisheries production but the near future is unlikely to see a major change in this sector's commercial contribution to the economy. In 1996, fresh fish exports was WS\$2.3 million but this is thought to be less than actual value sold (Johnson and Dhal, 1997).

2.6 Strategies for Economic Reform and Restructuring

Several past studies (AusAID, 1995; Burrows et al, 1991; Leonard and Ooi, 1995) have recommended that the government could recover its economic stability through the adoption of a range of macroeconomic policies. These policies have involved

reducing budget deficits, restraining current expenditure and strengthening duty and tax collection; increasing domestic savings and their contribution to capital formation for investment purposes; more emphasis should be put on key policy and institutional requirements for economic growth that includes the private sector development and encouragement of foreign investment; greater public sector efficiency; encouragement of domestic savings; strengthening of educational and training facilities; and encouragement of export-oriented production.

2.6.1 Sector Priorities - the government needs to prioritise two key productive sectors, namely agriculture and tourism. For agriculture, non-traditional high value export products and crops which are less vulnerable to plant disease and other natural hazards need to be developed and promoted. The MAFFM's capacities must be strengthened to provide extension and advisory services. The cattle industry has to be further developed and more productive land use achieved. For tourism, more international standard hotel accommodation must be provided. More effective overseas promotion of Samoa should be undertaken and access to land for development must be improved (AusAID, 1995 also reported by Johnson and Dhal (1997).

2.6.2 Public Sector Efficiency - there is a considerable scope for achieving greater public service efficiency through organizational restructuring; privatization and commercialisation schemes; clarification of agency objectives; greater accountability and human skills development. Therefore, (AusAID, 1995; Leonard and Ooi, 1995), specific measures required to improve the efficiency of public enterprises that includes: (i) strengthening the capacity to monitor the performance of state owned enterprises (SOEs); (ii) clarifying objectives and annual funding targets of these enterprises; (iii) appointing professional directors at boards level; (iv) upgrading the financial managerial systems and skills.

2.6.3 Private Sector Development - government policies need to recognise the importance of the private sector in the development process (AusAID, 1995). Some measures need to be taken that include: (i) clarifying government policy relating to the private sector; (ii) improving access to equity capital; (iii) streamlining application procedures and documentation requirements for private investors; (iv) identifying and delivering training in entrepreneurial business skills.

2.6.4 Human Resource Development - some priority areas need to be strengthened in education and health that are to: (i) promote greater public awareness of the national education policy; (ii) further upgrade the primary school system and encourage greater participation in secondary education; (iii) develop new sources of finance to fund expansion in the sector and possibly some cost recovery measures (AusAID, 1995). More emphasis must be placed on designing a national policy. Preventative health services must be improved and funding base to be strengthened. Importantly, encouragement of greater economic participation by women in formal training and educational programmes and more flexible employment in the public service (Leonard and Ooi, 1995).

2.6.5 Environment - environmental policies must be integrated into development planning (AusAID, 1995; Leonard and Ooi, 1995). This could be promoted by: (i) greater understanding of the rationale and importance of the natural environment; (ii) greater use of financial incentives; (iii) more active involvement by traditional resource owners in resource management.

2.6.6 Development Prospects - For the short term, production of traditional export products and growth in tourism should be improved to generate economic recovery. In the medium term, macroeconomic stability must be maintained, and further measures should be taken to increase public sector's efficiency and to promote private sector development.

2.7 Chapter Summary

Over the last three decades, national economic growth has been disappointing with particularly, poor performance from the agricultural sector in terms of exports and generation of foreign exchange. This has been aggravated by world market price fluctuations for major agricultural export crops, destructive cyclones plus the collapse of the taro industry. Fortunately, the whole economy has gradually recovered through the development of markets for major agricultural crop exports such as cocoa, coconut oil, copra and kava; introduction of bonus scheme plus the substantial contribution of the tourism sector. However, only some sectors (crops, fisheries) sectors have developed but others (forestry and livestock) have not. In addition, the agriculture sector will not be improved in the future if the agricultural extension service cannot meet the needs of the diverse and complex range of farmers in the

community (O'Meara, 1994). Despite all attempts that have been made in the past, the MAFFM's extension function is considered not effective and efficient in terms of mobility, community participation, extension approaches, socio-economic impact, and financial sustainability that imposes the heavy burden upon the government budgetary constraints. As a consequence, government is exploring other alternative strategies for agricultural extension (Lubett, 1997; Leonard and Ooi, 1995).

CHAPTER THREE: LITERATURE REVIEW

3.1 Introduction

This chapter reviews the theoretical concept of extension and diffusion of innovations as well as past, present and new trends in agricultural extension. This chapter also reviews the reasons why many countries have moved towards modified forms of extension including privatization. The main features arising from the review of the extension literature is subsequently linked with the analysis of the current status of the MAFFM's extension service in Samoa that is presented in Chapter 5.

3.2 The History and Development of Agricultural Extension

Extension was firstly used in Great Britain in 1850s by universities to give lectures to women's and men's associations and was called "*University Extension*". In the 1880s, universities extended their work to those beyond the campus, referred to as the "*extension movement*". Agricultural Extension came into common use in USA early in the nineteenth century when the Cooperative Extension Services were formed in each state in association with the Land Grant Colleges. Each state developed agricultural experimental stations and built associated educational institutions. This model has been adopted worldwide with the assistance of donor agencies (Swanson et al, 1990; Farrington, 1994). Extension is defined in many different ways (Van Den Ban and Hawkins (1988)):

The Dutch use the word (*voorlichting*), which means lighting the pathway ahead to help people find their way. The British and Germans talk of "advisory work" (*Beratung*), which implies that an expert can give advice on best ways to reach your goal, but leaves you with your decision. The Germans also use the word "enlightment" (*Aufklarung*) in health education to highlight the importance of learning the values and to guide us where we are going. They also speak of "education" (*Erziehung*) which is extension to teach people to solve problems themselves.

There are, however, some common meanings for the term, one of which is that: "*extension involves the conscious use of communication of information to help people form sound options and make good decisions*" (Van Den Ban and Hawkins, 1988).

Agricultural extension is defined by FAO as *“A service or system which assists farm people, through educational procedures, in improving farming methods and techniques, increasing production efficiency and income, bettering their levels of living, and lifting the social and educational standards of rural life (Swanson et al, 1990).*

3.2.1 Role of Agricultural Extension in Agricultural Development

Agricultural extension can contribute significantly to promoting agricultural development, increasing food production and social well-being. Extension has been linked with production objectives (food security, improved nutrition, equity and poverty alleviation (Swanson et al, 1990; Garforth, 1997). *Extension is an effective policy instrument for stimulating agricultural development in situations where farmers are unable to reach their goals, they lack knowledge and insight. But extension can be an ineffective instrument if not combined with others, such as research, provision of inputs and credits and marketing (Swanson et al, 1990).* Agricultural extension can teach farmers how to produce crops and animals in most profitable way and how to organize themselves in cooperatives and other farmers organizations. However it depends on the linkage between farmers' problems and research and thus it must be a two-way communication (Van Den Ban and Hawkins, 1988).

Agricultural extension has been widely criticised as being only aimed at achieving government policies while neglecting the needs of farmers. This reflects that government extension organizations rely on information from agricultural research and agricultural policy decisions but not from social, anthropological and psychological research that deal with farmers. Moreover, government policy instruments have forced farmers to increase export production for more foreign exchange although market price levels are unprofitable (Swanson et al, 1990). In developed countries farmers are organizing themselves to exit from government control. Such farmer organizations play crucial roles in agricultural development but in developing countries they do not exist or tend to be ineffective (Van Den Ban and Hawkins, 1988).

3.2.2 History and Development of Diffusion/Adoption of Innovation

The diffusion/adoption paradigm of extension was proposed by Rogers in the 1950s and 1960s. It consists of five stages - awareness, interest, evaluation, trial and adoption stages which influence adoption (Rogers, 1962). However, Rogers acknowledges that the adoption process does not always result in a decision to adopt, and that information-seeking behaviour often takes place after the decision. Rogers and Shoemaker (1971) propose a model of the adoption process which consists of four stages - knowledge, persuasion, decision and confirmation. This model was proposed to overcome some of the weaknesses of the popular five-stage model, for example, not all people went through each stage and that evaluation of the innovation occurred throughout the process.

The diffusion and adoption of innovation in the farming environment have been well documented by intensive studies over the last four decades. In earlier extension research, Roger's classical model of innovation diffusion (Rogers, 1962) placed emphasis on the use of contact farmers rather than homogenous farmers' groups. In 1983, it was renamed by Rogers as *Innovation-Decision Process* (Rogers, 1983). The idea was that innovation would flow from the innovators to the rest of the farming community through a "trickle-down" effect. This is where the disadvantaged farmers would learn from better-off farmers and therefore improve their farming techniques.

To illustrate this model, the farming community is categorised into four groups of adopters. These groups adopt new innovations in a sequential style according to whether they are innovators, early adopters, early majority, late majority or laggards. The time of innovative adoption is in that logic, i.e. innovators adopt first and laggards do not adopt easily. On the basis of these categories, extension programmes can perform very little for laggards. Roger's model assumes that the late majority would learn from the early majority, and in turn, the early majority would learn from early adopters. Finally, early adopters would learn by contact with innovators who first "try out" new technologies (Rogers, 1983). But not all individuals in a social system adopt an innovation at the same time. The adoption of innovations should normally follow a "*Bell-Shaped*" curve, if plotted on a basis of frequency of adoption over time. When the cumulative number of adopters are plotted, the curve appears "*S-Shaped*." The rate of adoption can be influenced by (a) perceived attributes of innovation, (b) type of decisions involved, (c) nature of clients system and

communication channel used, (d) extent of change agent's efforts (Rogers and Shoemakers, 1971; Rogers, 1983).

3.2.3 Importance of Diffusion and Adoption of Innovation

The diffusion of innovation model was widely adopted in developed countries (e.g. USA) and subsequently in developing countries, as a basis for design of extension programmes to increase agricultural production (Axinn, 1988). However, Roger's "*centralized diffusion model*" was criticised by Roling (1982; 1988) on the basis that it is based on a one-way communication model. Seemingly, extension programmes are controlled by government policy makers but not farmers. Innovations come from research and development (R & D) conducted by technical experts. Many extension agents do not really try to contact their low-status clients (laggards). Agents think that their lower status clients are not responsive to their efforts and only concentrate on elite clients (innovators and early adopters) from whom they expect innovation to trickle down to less disadvantaged clients. However, the need for the "trickle down effect" can be avoided by farmers' groups or cooperatives at which both farmers and the Extension Officer (EO) are involved in the decision making process. This also helps to improve the EO's credibility (Roling, 1988).

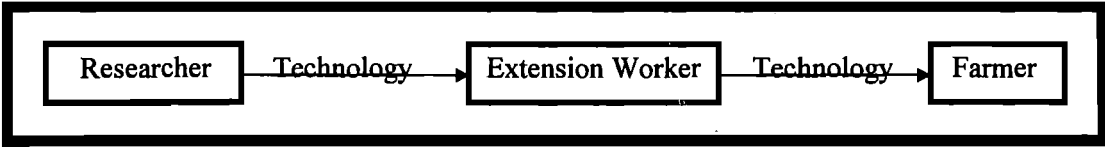
Furthermore, Roger's diffusion model has also been criticised by Clark and Stauton (1989). They have found the model inappropriate, particularly in poor, Third World countries where contact farmer techniques seem to have failed to improve the majority of poor farmers. Little trickle down has been observed in such countries and the model overlooks many of the other problems of extension. The model cannot be applied universally to all countries because of factors such as cultural differences, education level, access to communication media, religion, economic status, land tenure, geographical difference, nature of innovation and other social relations. Additionally, innovativeness cannot be measured by just observing behaviour of individuals, they have differential access to factors such as land, labour, inputs, markets, capital and information (Roling, 1988). In a country like Samoa where farmers have little access to credit and information, group methods might be more suitable as extension techniques rather than individual methods. The question of social and economic equity is being increasingly debated in Third World countries and therefore new extension models are continuously being developed (Van Den Ban and Hawkins, 1988).

The diffusion model assumes that all farmers in a community would be operating under similar conditions when the innovation is introduced. For this reason Clark and Stauton (1989) have called it a “*center-pheriphery model*,” or “*progressive farmer approach*” in extension systems. Rogers assumes that new technology would reach disadvantaged groups through progressive farmers but this assumption is questionable. Progressive farmers may be rich and high ranking people who never share the technology with their counterparts (Cummings Jr, 1990). Roling (1988) argues that progressive farmer approach has been centred around the T & V system where contact farmers are relatively more progressive compared to majority in the community (Benor and Baxter, 1984). In response, Rogers (1996) admits that “*decentralization diffusion*” model could reverse his one-way model of communication to allow users to make sound decisions on how the diffusion process is managed. He says “*Gradually, I began to realise that centralised diffusion model was not the only wheel in town*”.

In a review of extension over the last 10 years Alan Rogers reveals that the evolution of agricultural extension has succeeded due to its close links with science, technology and research and different approaches to development but it has not achieved the level of success that was expected in some areas (Rogers, 1992). In a response, Rogers identifies three generations of extension:

The first generation of extension is dominated by the “*top-down hierarchical*” model where researchers and extension agents assume that they know what farmers should learn. Although it has not been very successful, it is still in common use (Figure 3). For example, this model is still used in Samoa for special cases.

Figure 3: First Generation Extension Model - transfer of technology



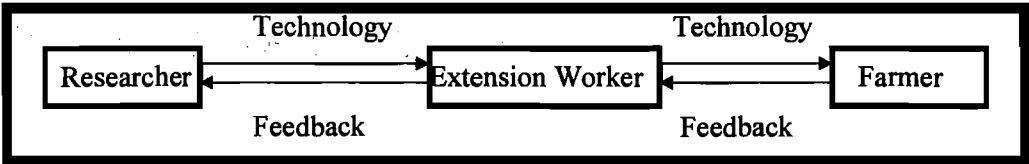
Source: Rogers, 1992

This first generation diffusion model cannot be excluded completely because it may be applicable and relevant to solve problems under certain circumstances (Rogers, 1992). For example, there might be poor farmers in farming communities who follow progressive farmers and adopt rapidly. Similarly, it is possible to find progressive

farmers who are able to help poor neighbours. But the number of such people varies from society to society (Van Den Ban and Hawkins, 1988).

The second generation of extension is where technology transfer starts with farmers rather than with researchers. Extension agents have to identify the gap in farmer’s knowledge in a more responsive approach. This participatory model in which farmer’s needs are articulated is sometimes called “*farmer first approach*” (Rogers, 1992; Chambers, 1983). There are two major problems with this model. One relates to the necessity of the extension agency introducing a message that they believe is essential from outside the farming community. The other is that it is top-down hierarchical process which still remains dominant and farmers are still considered as resource poor entity with extension agent being the expert, giving little room for farmers’ technological knowledge. (Figure 4).

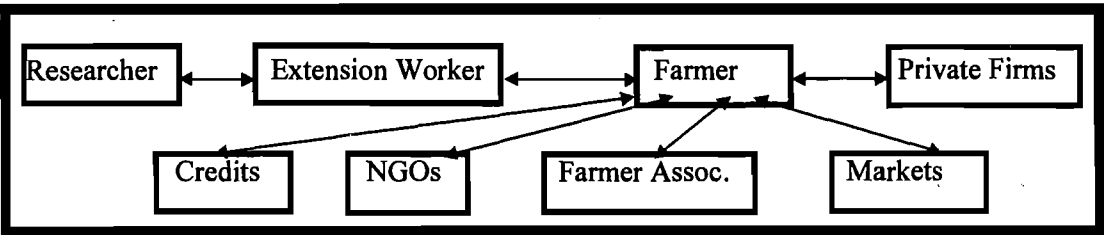
Figure 4: Second Generation Extension Model - meeting their agendas



Source: Rogers, 1992

According to Rogers (1992), the third generation model assumes that knowledge cannot be transferred, it must be created by every individual, and that everyone is learning throughout their life time. The premise is that farmers are not resource-poor people. They have developed their learning skills and knowledge over a long time, in an effort that suits them best, and they also have networks of communication and knowledge to devise solutions to their problems. Third generation extension, instead of providing answers for farmers’ problems, encourages and assists them to find their own solutions by questioning, analysing and testing possible solutions. It is therefore an interactive approach, if compared with directive top-down approaches (Figure 5).

Figure 5: Third Generation Extension Model - creating independent learners.



Source: Rogers, 1992

Several authors (Swanson et al, 1990; Van Den Ban and Hawkins, 1996; Ameer, 1994; Umali and Schwartz, 1994 and Antholt, 1994) have suggested that the third generation extension model supports the contribution of the private sector in extension systems as agricultural commercialization develops. Many countries are searching for other options to improve services to farmers and to reduce government spending and the level of intervention in the agricultural sector.

3.3 Effective Agricultural Extension

Designing of an effective agricultural extension is a difficult task and several factors need to be considered. Past studies (Benor and Baxter, 1984; Swanson et al, 1990; Van Den Ban and Hawkins, 1996) have advocated that any country aiming for effective extension needs to follow these guidelines:

3.3.1 Strong Policy Commitment - Good extension policies identify target groups and the resource endowments available (Swanson et al, 1990; Dutia, 1990). These policies guide the design and operation of agricultural extension, and training activities as an integral part of institutionalised agricultural development programmes. Agricultural extension policy must be flexible to accommodate any changes in management and extension programmes. It is important for field extension staff and managers to learn and make adjustments efficiently. Countries with a clear policy of legislation and regulation have more effective extension programmes than those without (Hayward, 1990; Contado, 1990).

3.3.2 Adequate Infrastructure - Extension cannot be sustainable if rural infrastructure is poor and this is major constraint in developing countries where most extension efforts are concentrated on urban areas and never reach the rural poor (Cummings Jr, 1990; World Bank, 1990; FAO, 1990). Hayward (1990) noted that the improved offices, transportation and communication systems facilitate the linkage between farmers and researchers and allow feedback to researchers and policy makers. However, the communication support in developing countries is usually weak due to a poor supporting environment.

3.3.3 Appropriate Extension Approaches and Programmes - Extension systems need to be situation specific, responsive to local situation and farmers' needs, and may include a combination of approaches. This is the reason why Benor and Baxter (1984)

has argued that the T & V's principles must be maintained due to the variations in agro-ecological conditions, socio-economic environments, and administrative system. It is unrealistic that a single extension system can effectively serve the needs of all clients as they have a diversity of technological and educational needs. Thus governments need to have an adequate framework of macro-economic, social and agricultural policies. A national extension policy can be defined that recognises the clients to be served, organisational placement and linkages and funding arrangement and ensures that the extension programmes serve the needs of a diverse range of clients. If extension programmes do not consider these factors rich farmers would benefit most (World Bank, 1990).

Farmers' needs must be articulated and recognized in terms of effectiveness of information transfer and new areas in which farmers need assistance. Farmers should not only be involved in budgeting but also in determining technologies needed, the scheduling of field visits and demonstrations (Swanson et al, 1990). Farmer's involvement in policy formulation and periodic reviews through formal and informal consultations create a "*demand-driven*" national extension system, depending on the cooperation from extension field officers, Subject Matter Specialists (SMS) and managers (Hayward, 1990; FAO, 1990).

3.3.4 Appropriate Extension Methods - Extension messages must be relevant to solve farmers' problems but (Swanson et al, 1990) suggests that the effectiveness of extension also depends upon the types of extension methods being used. The extension methods such as individual farm visits require a well-trained extension agent with considerable skills and personal contacts. Individual farm visits are expensive but more effective in terms of interaction and feedback than mass media. Group methods are less costly than individual farm visits and can be more effective than mass media in terms of technology transfer and adoption. Mass media, including radio broadcasts, TV programme and written material is cheaper and achieves larger coverage than group and individual farm visits and is therefore a cost-effective extension method which informs, stimulates discussion, changes behaviour and transfers knowledge (Van Den Ban and Hawkins, 1996).

3.3.5 Appropriate Training Materials - Extension field staff and managers must have access to an adequate supply of materials particularly for group discussions, meetings, lectures, demonstrations, field days, conferences and seminars. Written

materials such as leaflets, flip charts, video tapes and bulletins must be available to elaborate the topic (Van Den Ban and Hawkins, 1996).

3.3.6 Education and Training - Adequate training for extension personnel is fundamental to effective extension to improve staff competence, professionalism and service morale (World Bank, 1994). In-service training facilitates the technology transfer from research through SMSs to field workers. Short and long term staff training is necessary for field workers to improve their knowledge, qualifications and technical skills to assess farming situations and effects of extension advice and to feedback this information. An incentive system including salary, promotion, training opportunities and employment security is necessary to improve staff stability and morale (Swanson et al, 1990; FAO, 1990).

3.3.7 Strategies For Reaching Women Farmers - Special extension and training programmes are required for women farmers who are usually not catered for adequately by mainstream extension programmes. Several authors (Swanson et al, 1990; Van Den Ban and Hawkins, 1996) have claimed that public extension organizations target their services at achieving the needs of commercial farmers in terms of more resource allocation but only a few resources are allocated to women and the ethnic minorities. Similarly, private sector firms concentrate their technology transfer efforts to male farmers who can afford the service, assuming that farm managers and decision-makers are always men. This assumption is no longer valid as the number of women farmers increases (Saito and Spurling, 1992). In Samoa, for instance, the number of women farmers has increased from 30% to 50% of total farmer population due to migration of men for off-farm employment following the collapse of the taro industry (Taulealo, 1993).

3.3.8 Monitoring and Evaluation of Extension Programme - Monitoring and evaluation are necessary to assess the changes in farmers' knowledge, attitudes and adoption of technology (Benor and Baxter, 1984). Monitoring can track performance of extension services and highlight problems quickly. Evaluation can assess the internal efficiency and external impact of agricultural extension services. The extension service's goals and objectives can be scrutinised in the framework of national agricultural policy. Evaluation seeks answers to govern the future direction of extension but it is extremely complex and costly (Swanson et al, 1990; FAO, 1990). A good evaluation system serves to ensure the extension system's flexibility, improve

the organization and programmes and contribute to financial and programme sustainability (World Bank, 1990).

3.4 Top-Down Approaches To Agricultural Extension

Over the last three decades, after the World War II, many developing countries were confronted with famine and related health problems. Donor agencies, especially the World Bank committed over US\$1000m during the 1970s to smallholder projects involving research and extension, rising to US\$4700m in the 1980s to support the public sector extension of different countries, in promoting agricultural development, improving national food security, income and social well-being (Farrington, 1994; Swanson et al, 1990). These agricultural extension projects and programmes were predominantly administered by Ministry of Agriculture or similar institutions. Extension activities were controlled by governments with a bureaucratic philosophy using “*top-down*” dissemination of technology to farmers (Swanson et al, 1990). Extension approaches were criticised of being targeted at commercial farmers and high valued commodities rather than at subsistence farmers, although the T & V system, which was the dominant extension method of the period, was aimed at increasing the participation of poor farmers in agricultural development. The dominant “*top-down*” extension approaches, including the T & V system, are reviewed in the following sections.

3.4.1 General Agricultural Extension Approach

The General Agricultural Extension (GAE) approach was first introduced in the 1950s and 1960s with the aim of increasing agricultural production and improving national food security and social well being. The GAE approach, however, encouraged most countries to borrow from international lending institutions to improve the institutional and infrastructure development, human resource development, and to sustain the operating expenditures of the system. Hence, this government intervention aggravated the budget deficit and accumulated foreign debts (Swanson et al, 1990; Axinn, 1988). According to Benor and Baxter (1984) cited in Swanson et al, 1990, emphasis was upon improving large research and extension stations, better equipment and other facilities and recruitment of more extension personnel and researchers. Technology transfer was achieved through individual farm visits, groups methods and mass media communication. Farm inputs were fully subsidized including capital inputs such as

vehicles and farm houses but the service was not financially sustainable beyond the project life. The government budget spent more on staff salaries than on recurrent costs which affected the mobility of extension and staff supervision (Benor and Baxter, 1984 also cited in Ameur (1994)).

Hayward (1990) argues that donor agencies and recipient governments assumed this approach could transfer the improved technology to farmers but it was not successful, not because extension failed, but because of other constraints to agricultural change. Improved technologies did not work because complementary inputs such as fertilisers, credit, storage, marketing or processing were often unavailable. Technology was not widely adopted by farmers because of diversity in socioeconomic status, needs and priorities. Swanson et al (1990) argues that it is unrealistical for a single system to effectively serve the needs of a diversity of farmers in the community as they have different needs.

A national extension policy can be defined as one that recognises the clients to be served, organisational placement and funding arrangement and ensures that the system serve the clients needs. This approach was far too expensive for governments because of the high recurrent cost demands (Axinn, 1988). Consequently, this approach resulted in limited farmer contacts and inadequate linkages with researchers. Field extension workers were poorly trained, inexperienced and overworked together with ineffective extension methods due to lack of financial support. Also there was a lack of farmers' participation in decision making process. These problems determined that this particular approach imposed a considerable burden upon government budgets and contributed to the accumulation of national debts.

3.4.2 Integrated Rural Development Project Approach

The Integrated Rural Development Project (IRDP) Approach was introduced in the 1970s to alleviate difficulties created by the GAE approach by promoting other supporting services (e.g. credit, inputs and rural infrastructure). The intention was that rural farmers gained sufficient access to inputs and technical information to improve their farm production and income leading to better health, education and social well-being (Axinn, 1988). Farrington (1994) noted that the IRDP approach is regarded as an integrated approach which alleviates the rural poverty through the improvement of farmers' accessibility to better supporting services to increase the agricultural

production. New State-owned Enterprises (SOEs) such as financial lending institutions, credit unions, rural banks and input suppliers were established and price stabilisation schemes were put in place to channel government subsidies to farmers (Swanson et al, 1990). As a consequence, these services were accessible to farmers but promoted the over-reliance of farmers on government assistance rather than self-reliance and self-sufficiency. Farmers' participation was high in the field but not in the decision making arena. Farmers' participation in decision making is normally rejected by local government bureaucrats and powerful elites as it would decrease their control over the project (Cummings Jr, 1990).

However, Swanson et al (1990) Tacconi and Tisdell (1992) revealed that many projects made many unrealistic assumptions about the availability and quality of extension staff and provision of inputs. The system established for the delivery of technical messages was premature due to the lack of suitable technical information from research which left extension services with little to extend (Chambers, 1987). In addition, donors perceived national extension services as fragmented, poorly trained, responsible to more than one authority, having little contact with research services and tending to work with wealthier rather than with low-income farmers (Farrington, 1994; Antholt, 1994). Cummings Jr (1990) argues that coordination between extension and supporting services is often poor, particularly beyond project life, and that the IRDP approach is too costly to be sustainable. Cernea (1991) indicated that another contributing factor is that the Cost Benefit Analysis (on the basis of Internal Rate of Return (IRR)) has normally been used for project evaluation but a positive IRR does not prove the project is sustainable. Many projects generate more benefits than costs but few projects are both ecologically and economically sustainable which imposes some environmental threats upon target population's livelihoods (Chambers, 1987).

3.4.3 Training and Visits System

The Training and Visits (T & V) system had its origins in Israel in the 1950s, was subsequently tried in a World Bank project in Turkey in the late 1960s, and then introduced to South Asia in the late 1970s, initially where there was thought to be a large backlog of appropriate technology on the shelf (Farrington, 1994).

Several studies (Benor and Baxter, 1984 cited in Swanson et al, 1990; Axinn, 1988) stated that due to problems of previous extension approaches, the T & V system was introduced in 1980s and widely adopted by many developing countries to reform the GAE approach in terms of mobility, staff supervision, logistic support and narrowed the focus of extension to concentrate upon technology transfer. The basic aim of the T & V system is similar to GAE approach, however, T & V system is criticised as being rigid, too top-down in orientation, costly to operate because of high recurrent personnel costs and too heavily focused on technology transfer at the expense of human resource development. The aim of T & V system is to improve the organisation, management and professionalism through regular training which is perceived as a rigidly structured *blueprint*. The T & V system is criticised as focusing too much on procedures rather than on increasing the relevant messages (Cummings Jr, 1990; Contado, 1990). For example, the T & V system in Pakistan had no impact as it focussed too much on process and not enough on increasing the relevance of technology messages and different methods of transferring them to farmers (Antholt, 1994).

Cummings Jr (1990) argued that the T & V system is only applicable to commercial or progressive farmers but not those who operate on a subsistence basis. He refers to T & V system as the “*trickle-down*” “*progressive farmer approach*” due to the lack of poor farmers’ participation in decision making process. This method focuses on contact clients, the majority of them being progressive in the community and mostly men. However progressive farmers rarely share the technology with their subsistence counterparts, although the questionable assumption was that progressive farmers would transmit the technology (also cited in Dutia (1990)). Thus other countries have shifted to participatory approach. For example, Thailand has moved to a “*participatory farmer planning*” approach after trying T & V system for 5 years in the 1980s. Although crop diversification and cropping intensity had increased these changes could not be linked reliably to the investments in T & V system (Antholt, 1994).

Hayward (1990) has argued that T & V system relies too much on government resources and funds from international loans which in turn creates a burden on taxpayers and rest of the community. The T & V system still imposes a high long term costs upon government’s budget. This approach is thus unlikely to lead to sustained production increases unless effective research, incentives, inputs and

infrastructure are also in place. In India, the T & V system was effective in delivering technology to farmers and in increasing crop production and changing cropping patterns through recruitment of more well-qualified staff and provision of credit but it aggravated the government budget deficit. Thus, the Indian government is now exploring the role of private sector in extension to share the costs and responsibility with users (Ameur, 1994).

Saito and Spurling (1992) and Cummings Jr (1990) highlighted that all extension activities are often planned by SMSs and field extension staff without farmer consultation. This approach is only applicable to export commodity enterprises because field extension officers concentrate on cash crops to meet government policy of higher foreign exchange earnings. For example, the T & V system in Indonesia was only successful in improving high commodity (rice) production but had little impact on other food crops, livestock and fisheries. The extension efforts were focussed on rice farmers and while more staff were to be recruited, only half of them were actually employed due to budgetary constraints. As a consequence, the Indonesian government is now looking for strategies to increase farmers' participation through farmers' associations, non-government organisations and private sector (Ameur, 1994).

Selection of contact farmers has been criticised as remaining in the hands of government bureaucrats (EOs) but not farmers (Ameur, 1994). The T & V system is based on Allan Rogers's first and second generation extension models (Rogers, 1992). Contact farmers must be chosen from the community in consultation with village leaders and key informants (Casley and Kumar, 1988; Chambers, 1991). However, (Hayward, 1990) suggested that, nevertheless, the T & V system is applicable to developing countries whose extension service is ineffective due to the lack of well-qualified extension personnel, resources and coordination and poor infrastructure, and in addition, the majority of the population are engaged in agricultural production for their livelihood. Beilin (1992) suggests that the T & V system in Samoa still needs modifications to obtain higher farmer participation and to reduce the financial burden upon the government. Another alternative system is to work through farmers' associations, cooperatives and non-governmental organisation (NGOs). Malaysia, in 1984, decided that T & V system was not a workable model, and changed to a market-driven, commercial approach linked to farmer groups.

3.4.4 Lessons Learned From The Past Experiences

Many agricultural extension initiatives undertaken by donor agencies have put the developing country government in a difficult financial situation. Even some developed countries are no longer able to afford their extension systems. Most developing countries have adopted a variety of extension systems that are more applicable to developed countries where the majority of farmers operate on a commercial basis and have unlimited access to better agricultural support services. In developing countries, many farmers are cash/subsistence and do not have access to such a range of services. Most agricultural extension projects and programmes made wrong assumptions of countries' socio-economic situations, farmers' participation, quality and quantity of extension staff, government and other supporting services. Ameer (1994) noted that many governments in developing countries lack a strategy for extension or master plans. These efforts have, in addition, over-exploited local environmental and other resources resulting in more social costs (Ameer, 1994; Swanson et al, 1990; Van Den Ban and Hawkins, 1996).

In the past decades there has been a lack of consideration and integration of social issues in agricultural extension programmes, and the failure to include target beneficiaries in the decision making process. Extension efforts were focused on progressive farmers' needs and with the assumption that only government is the main provider of technology transfer. As a consequence, poor social welfare, social equity and inequitable distribution of income among rural communities have resulted as Chambers (1988) says "*Poor became poorer and rich became richer*".

3.5 Bottom-Up Approaches To Agricultural Extension

In response to lessons learnt from "top-down" approaches, some countries have prioritised the participation of target beneficiaries in the decision making arena in an attempt to meet farmers needs and economic sustainability of extension programmes and projects. Farrington (1994) notes that the pressures towards community participation and good governance are reinforced by political and economic reform allowing people to have stronger influence on the design and implementation of projects and programmes. Due to budget deficits, some countries have shifted to other key suppliers (players) of agricultural extension services - non-organizations, non-profit organisations (universities) and the private sector including farmers

associations, private production and marketing firms, and private consulting and media companies (Umali and Schwartz, 1994).

Generally, these “*bottom up*” approaches facilitate the target beneficiaries’ participation in policy making and establish a dialogue with other key players that lead to considerable success in terms of technology adoption, increased agricultural production and national food security, equitable income redistribution and social equity. Additionally, these approaches improve the consideration and integration of social issues in public extension service through higher participation of all community components in democratic policy making arena with key players (government, NGOs, aid agencies and input suppliers or exporters) to ensure the community development. Full participation of these different players has achieved the complexity, diversity of farmers’ needs and priorities needed to resolve the socio-economic problems in the agriculture sector. For instance, NGOs have a well-known reputation of addressing women’s’ issues and working with women’s’ organisations and ethnic minorities. Women have significant roles to alleviate rural poverty and improve primary health cares, household income.

3.5.1 Farming Systems Development Approach

The Farming Systems Development (FSD) approach was adopted to increase farmers’ participation and create a better linkage and feedback between research, extension and farmers (Axinn, 1988; Swanson et al, 1990). This “*participatory extension*” approach is successful in facilitating full participation of researchers, extension staff, other service organisations and the indigenous community through Rapid Rural Appraisal (RRA)/Participatory Rural Appraisal (PRA) techniques (Chambers, 1994). Several past studies (Casley and Kumar, 1988; Chambers, 1988) state that the PRA is a holistic approach whereby multi-disciplinary teams address the social, economic, financial and ecological issues to formulate appropriate strategies according to local peoples’ needs and priorities. This also incorporates the indigenous farming techniques and scientific knowledge system to ensure the new sustainable farming systems technology improve agricultural development, household income, food security and social well-being (also cited in Von Blanckenburg (1988); Clarke and Thaman (1993)). Casley and Kumar (1988) have found that the RRA/PRA techniques are cost-effective in identifying farmers’ problem, formulating strategies and facilitating technology transfer to rural farmers through democratic consultations and

negotiations as the whole exercise takes only a few days to complete the process. The FSD approach has a greater potential for crop diversification, agricultural commercialisation, educational and human resource development (Swanson et al, 1990). Farmers, for instance, are the key field personnel who reduce financial pressure upon the government budget on high turnover of field extension staff and operating costs (transport, fuels, administration) but also educate themselves in implementing extension activities, based on their indigenous knowledge, value, beliefs and resources with little reliance on outside assistance (Axinn, 1988; FAO, 1995⁸).

This participatory extension approach was implemented successfully by many countries (e.g. Asian, African and Pacific Islands) as one of major approaches to serve their clientele. Both government, non-governmental organizations (NGOs), aid agencies and farmers fully participate in democratic decision making arena with farmers as major decision makers. Working with people through dialogical methods is sustainable rather than enforcing with subsidies. Such approach are jointly controlled by the government and local community but it might be too difficult to administer due to little control from central office when there are many implementing agencies involved. This would lead to competition, confusion and lack of coordination and communication (FAO, 1995). Extension activities are conducted through farmers' associations, cooperatives, homogenous groups (men and women) groups and households to ensure the extension services meet their needs and priorities. This is regarded as an empowerment approach through which local community are involved in planning, implementation and management of development enterprises leading to social, economical, ecological and financial sustainability (Chambers, 1988, 1994).

According to Kulawart (1998), the NGO's role is recognisable in the international aid arena because of their concerns about sustainable development and rural poverty-alleviation and they become government's partners in mobilising public opinion and in policy making arena which close the gap between governments' promises and actions over improving rural people's lives. But it depends on governments' commitment to democracy and the political will to strength the civil society through measures such as tax privileges for NGOs, including people in policy making, and

⁸ FAO. Mannual based on materials presented at a Workshop on Farming Systems Training for Sustaianble Development held in Apia, Samoa in July 1995, for research, extension and planning staff

treating them as equal partners. Fowler (1996) indicated that NGOs serve a variety of interest groups, prioritizing the accountabilities, demands, and expectations of people but it depends upon who represent the legitimate interests of marginalised groups in development dialogues and aid negotiations leading to joint-control system, self empowerment and self confidence.

Many countries, however, have found that FSD approach requires strong commodity research support and relatively sophisticated technical skills by researchers and extension staff (Cummings Jr, 1990; Contado, 1990). The FSD approach also requires high mobility for transportation to conduct regular farm visits and strong links with extension and farmer participation in on-farm research. These requirements are often missing in developing countries. Seemingly, it is competing for scarce resources rather than identifying ways in which limited resources can be used (Cummings Jr, 1990) also cited in Hayward (1990). Furthermore, the FSD approach has treated the community homogenously and that failed to recognise the gender segregation of labour as the technology transfer focuses on men but they have different roles and needs. Swanson et al (1990) and Axinn (1988) revealed that the cost to governments was far too high and results came slowly. However, governments still continue to invest in this approach due to higher farmer participation and relevant technology to small farmers.

3.5.2 Community Development (CD) Approach

Donovan (1993) states that the *CD approach is a good way of coordinating all components of the community with government, non-government organizations and aid agencies to create local employment opportunities and positive activities leading to self-sufficiency and self-reliance.*

The CD approach has been successful in many countries in facilitating the full participation of indigenous communities and other key players of agricultural extension in democratic consultations and aid negotiations to ensure the whole community development (Umali and Schwartz, 1994). Popple (1997) stated that the CD approach brings true democracy, self-determination, self organisation, traditional political groups function, transformation of social relations through collective action, in the pursuit of social justice and equality. This would facilitate the active participation of voluntary organizations in adult education to raise expectations and desire prior to becoming self-reliance and self-sufficient. Such an approach can

challenge male village elites in the community development arena to resolve social problems, engaging with social structure to understand the causes of inequality and exclusion prior to turning personal troubles into public issues.

Jones (1986) stated that the principles and methods of extension work are now being deployed in diverse institutions both within government and non-governmental organizations at which local powerful individuals, groups and institutions can be confronted. This community-based and consultative approach involves a variety of methods that include in-depth personal interviews with individuals or groups of individuals, small group meetings, workshops and seminars as well as observation and participation in local activities and community life. These techniques provide qualitative information to augment quantitative and documentary data obtained through secondary sources and surveys which often complete the triangle of information required to validate an issue (also cited in Jones and Rolls, 1982).

Taylor et al (1990) indicated that these techniques provide both a personal philosophical and a technical challenge to the practitioner. Such an approach acknowledges the right of community and interested groups in a democratic decision making process to express their concerns to changes proposed. It also uses distinct social groups and relationships (work and gender, ethnicity, kinship, age and length of residence, religion) upon which historical, political, economic and ecological analyses can be performed. Practitioners (extension staff) have to check information from secondary sources, to establish relationships with the community and its members, to clarify and establish roles for the multi-disciplinary team. Key actors in various aspects of community life, including formal and informal representatives of interest groups and organisations can be interviewed. The team has an opportunity to listen and interact with the community members' perceptions towards its preferred futures, problems and current issues. Community groups are empowered when the practitioner shares information and responsibility on how things work locally and thereby encourages participation to make it more effective (Taylor et al, 1995; Jones and Rolls, 1982; Jones, 1986). Such an innovative approach, including consultation and social assessment, would decentralise, the decision making and ensure a focus on ethnic groups, and other weaker sectors' needs and priorities. This would identify the information on social and bio-physical effects of development programmes and

facilitate the use of local knowledge and expertise rather than reliance only on extension staff information. Government extension staff act as facilitators and rural society as the initiator to seek authority for intervention in socio-economic affairs, rather than policy makers and administrators, preventing government officials from favouring the village elites (also cited in Cernea, 1991).

Several authors (Cernea, 1988; Jones and Rolls, 1982; Jones, 1986; Cassen, 1987) admire the NGOs' considerable contribution in "*putting people first*" by concentrating on key areas such as natural resource management, rural infrastructure, human resource development, agricultural development and non-agricultural enterprises. This recognizes people's participation in development policies and reverses conventional approaches through the promotion of low-cost technologies affordable to the ethnic minorities and other poor people. The capacity to deal with socio-economic problems, to organise farmers groups in policy dialogue with government officials prior to rural poverty alleviation, improve primary health care and increase household income are other features of the CD approach. But there is a limited replicability, lack of technical expertise and limited self-sustainability.

Umali and Schwartz (1994) stated that NGOs specifically concentrate on areas where the government extension service is weak or non-existent, for example rural areas. NGOs have strong linkage with international development agencies as a source of funding and are capable of influencing government policies because these agencies have learnt from consequences of not involving the grassroots organisation of beneficiaries in decision making process. NGOs have substantial contribution and initiative to resettlement of people, mobilisation of community support groups, use of community development workers instead of government extension staff. NGOs have a recognisable reputation in addressing gender issues and working with the grassroots level organisations towards self-reliance and self-sufficient (Robson, 1994; Jones, 1986; Schwartz, 1994).

Robson (1994) stated that NGOs have potential for mobilising and investing local savings and for developing system of recurrent cost financing to supplement government budgets. These small credit schemes would enable local people to carry out economic activities which create jobs and increase household income. NGOs are self-reliance depending on fees from user charges but place a strong preference on welfare rather than economic development activities which have insufficient contribution to national economic growth. Cernea (1988) argued that NGO's approach is not to financially induce development but organise voluntary group action for self-development and self-reliance.

Umali and Schwartz (1994) suggested that the CD approach is a good possibility to complement public and private extension services by promoting the involvement of cooperatives, farmers and other community-based organisations, NGOs and private firms in extension activities. This would lead to reduction in government spending and intervention and to concentrate on policy making, social and environmental issues and provision of better infrastructure (Schwartz, 1994).

Donovan (1993) indicated that the CD approach improves a full participation of grassroots level organisations in policy making arena to meet their diversity short and long term needs through new productive enterprises leading to increased productivity, human development, redistribution of assets and powers within society. Such initiatives lead to equal profit distribution which guide the government and private sector to target financial assistance and investment at disadvantaged communities. Local resources are mobilised with little assistance from government and such approach acts as a catalyst, reduces the government's intervention and spending on costly subsidy mechanism. But community enterprises lack the management expertise and capital resources, they are often small scale, dependent upon professional advisers and create a small number of jobs that might rely on government subsidy (also cited in Robson (1994)).

Burkey (1993) stated that most policy makers and extension planners assume that people have common needs and this binds them together. These assumptions prove to be unrealistic. The better off benefit most and that results in great disparity and inequality among rural population. Policy makers often neglect community participation because it is costly in terms of administration and time consuming to organise. Donovan (1993) argues that the CD approach is more acceptable and accessible to the disadvantaged when it is operated by their own members. Fortunately, this approach reduces the government spending (recurrent costs of extension) and intervention while improving the involvement of target beneficiaries in designing, implementation, monitoring and evaluation of extension programmes. The CD approach is, however, difficult to manage from the central office. Practitioners have normally been accused of favouritism and corruption as they deal with village elites. The CD approach has been promoted in Samoa to improve village community participation in agricultural extension programmes aimed at improved food security, household income and social well-being through the village CBOs. However, there are problems encountered. For example, the CD approach has been perceived as being

unsustainable because of wrong incentive schemes (material gifts and free labour) to induce the community participation (Wood, 1994 also cited in Lubett 1997).

3.6 Women and Extension

It has been widely recognised that women have, in the past, been excluded or marginalised by extension. To ensure that women are included in rural development two different approaches have been taken: Women in development (WID) approach, and Gender-Sensitive approach.

3.6.1 Women in Development Approach

The Women in Development (WID) approach focuses exclusively on women as a separate part of the community. The WID approach has been adopted by many countries to strengthen the women's role through exchanges, interactions and negotiations, recruiting women as extension agents particularly as SMSs and supervisors (Saito and Spurling, 1992). The WID approach provides unique opportunity to incorporate women in the extension service and thereby increase the number of female beneficiaries (Arnold, 1991). Additionally, Burkey (1993) suggests that women must also participate in political decision making arena and extension activities must be conducted using women groups as contact farmers. These are cost-effective ways to deliver extension and inputs to women farmers and finance recurrent costs. NGOs could organise, train, and act as intermediaries between women farmers and formal lending institutions for credit (Rothschild, 1990). However, several past studies (Saito and Spurling, 1992; Moser, 1989; 1993) argued that the WID approach only focuses upon meeting women's practical needs and meeting these needs does not necessarily change women's subordination and the socio-cultural relationship between men and women in the society. Women specific programmes and projects are often small scale and welfare oriented rather than being development-orientated. Moser suggests that extension planners and policy makers must consider these five policy approaches of welfare, equity, anti-poverty, efficiency and empowerment to meet the triple roles of women. This would treat women as target beneficiaries and empower them in terms of self-reliance and freedom of choice. Rothschild (1990)

suggests that a more appropriate approach is to investigate the gender needs (practical & strategic)⁹ of both women and men (also cited in Saito and Spurling (1992)).

3.6.2 Gender-Sensitive Approach (GSA)

The Gender Sensitive Approach has, therefore, been adopted by a few countries and is considered a more appropriate way incorporate women in agricultural extension programmes. Rothschild (1990) indicated that this approach examines the technical consequences of gender specific needs, interests and constraints, and of the dynamics of men-women interactions through intensive investigations and consultation workshops. This analysis leads to gender sensitive planning of extension. It also reduces the inequality between men and women, improves the status of women through creation of more employment opportunities and training, equal rights to land and other capital assets, control of resources and income generating options (also cited in ILO, 1992; USAID, 1989). Furthermore, Moser (1989; 1993) and Rothschild (1990) stated that the GSA also considers the “*triple role*” of women (the productive, reproductive and community roles) with the aim of alleviating rural poverty. Normally, only the productive role of women is recognised by policy makers and project planners while the reproductive and community roles are often neglected. Moser (1989) realised that there is a need to examine the nature of relevant agricultural policies to remove existing barriers against women (e.g. collateral for credit). Thus, more attention needs to focus on macroeconomic policies as these might conflict with agricultural extension objectives to increase men and women’s productivity and income.

Catherine et al (1996) revealed that many past development planning attempts have failed to recognize women’s contribution to agriculture due to the absence of an adequate analytical framework for integrating women into project analysis. Such a framework is necessary to ensure the participation and productivity of both men and women are taken into consideration particularly the gender segregation of labour.

⁹ Practical Gender Needs (Basic Needs) are those which are identified as a response to an immediate perceived necessity (food, shelter, income, health, employment, etc), identified within a specific context. Strategic Gender Needs (Structural Needs) are those needs which are identified because of inequalities between men and women. These needs may relate to access and control of resources, legal rights, division of labour and any other issues which assist women gain equity and equality between men and women. Meeting these strategic gender needs changes existing roles and challenges women’s subordinate position.

3.7 Public vs Private

Schwartz (1994) stated that public and private sector participation in the agricultural extension system is driven by different sets of motives. Private sector investments in extension are determined by the economic returns from the activity. Public sector involvement is governed by efficiency considerations but more emphasis is placed on social and distributional objectives. As classified by Umali and Schwartz (1994):

[agricultural information, public goods because of low excludability and subtractability can be provided to farmers through personal contact, lecturers and seminars, training and farm demonstrations and direct conversations as toll goods in the short term. Thus the private sector has incentives to provide these services because of ability to exclude the non-payers and appropriability of returns from the activity. But the government regulation is necessary in terms of establishing property rights, condition of competition, and pricing of and quality standards for toll services, if concerns exist regarding marketing power, the equitable access by consumers or optimal provision of the service. If the information delivered cannot exclude the non-payers, attendance in extension venues is constrained by the facilities, infrastructure and time it takes to reach a critical mass of interested farmers. For example, lecture halls, demonstration fields and classrooms have fixed capacities. In the long term, however, the diffusive nature of general information (public goods) determine there is an incentive for farmers not to pay for it - there is free-rider problem. Because of limited possibilities to charge fees and earn reasonable profits, private firms have no incentive to provide such services. Similarly, general information transferred via mass communication channels by virtue of the medium so its delivery should remain a public or non-private responsibility (also cited in Silverman, 1992).

In some special circumstances (Schwartz, 1994), private sector could provide extension pertaining to general production, cultivation, marketing and/or processing, despite being a public good in the long term. For instance, private marketing firms might undertake extension activities when there is a reduction in input supply and/or quality risks as part of contract farming schemes but production costs is greater than the cost of extension.

[Contract growing in Mexico and Thailand are undertaken by private firms which introduce the new technology to farmers to increase output, reduce post harvest losses and improve quality, consistency and timeliness of output (Ameur, 1994)].

Likewise, input suppliers provide complementary informational extension service as part of the technology sale to promote their produce, ensure the product's proper use and/or account the cost of extension in price discounts on products (Umali and Schwartz 1994)

[For example, the Pro Agro Company in India use on-farm demonstration trials, field days and video presentations to promote its products. In Philippines, sales representatives of companies hold village group meetings to promote their products with the incentives of winning a prize such as radio or electric fan]

But their feasibility and success could be influenced by the nature of crop, commodity prices and pricing policy, land tenure, macro-economic and macro-institutional policies, payment systems, farmer participation and presence of alternative markets. In addition, profitability of private consulting firms are dependent upon the cost of and returns to the services they provide. The returns to an extension service are dependent on the nature of product, degree of specificity of information, size of growth farmer demand for extension, level of the input and output markets, degree of development of the supporting infrastructure, and degree of competition in extension services market. The costs of providing extension services could be influenced by the supply of and demand for qualified extension personnel, economies of scale in the delivery operations, and the availability of publicly generated extension materials. Thus government intervention is necessary to provide the guidelines for market competition and other regulations (Umali and Schwartz, 1994).

[In Kenya, for example, exporters provide inputs and extension services to farmers as part of contract. But they are poached by competitors of contracted farmer produce creating difficulties in recovering the benefits of their extension investment]

Schwartz (1994) noted that farmers associations serve as an effective mechanism to overcome the “free-rider” problem by providing public goods to their own members, recouping the costs of information through membership fees and other charges. Large membership provides a mechanism for taking advantage of economies of scale with delivering of agricultural information. But their profitability and survival are dependent on the quality of services they provide. These associations employ part-time or full time staff to provide extension information or hire consulting firms.

[In Zimbabwe, the Commercial Farmer Unions (CFU) employ extension specialists and farmers have access to variety of information sources (including private consultants). They maintain linkage with public sector research and extension and provide services, for example, training and collaborative efforts in field demonstrations (Ameur, 1994)]

Umali and Schwartz (1994) indicated that as agriculture develops, information becomes more specialised, less easily shared and not universally consumable. For example, the formulation of computer programmes to facilitate farm operations are *all client and situation specific*. Because of the private goods’ high subtractability and excludability and appropriability of returns in the production and distribution of these products. Thus, private firms have the incentives to supply the private goods (modern technologies) to all types of farmers as toll goods. But there are moral hazard problems associated with the use of these technologies.

For example, private firms might enforce quality control to maintain brand loyalty which exclude poor farmers. If these measures are absent or weakly enforced, government intervention is necessary by enforcing the regulatory standards of such goods (Antholt, 1994). Thus, small farmers have no incentive to pay for services unless they have the desire and capacity to convert to commercialized farming. Medium and large-scale farmers have incentive to pay for private goods as they could share the cost and afford the services. They are located in productive areas with access to essential infrastructure which enhances the profitability of their operations (Umali and Schwartz, 1994). However, the use of some of these technologies also involves both positive and negative externalities (spillovers). The government intervention becomes necessary in the form of industry regulation and strict product standards in the case of negative externalities. For example, safety test such as residue analysis is needed for approval prior to entering the market. The government has to impose penalties on firms responsible for negative externalities and/or provide subsidies to those producing positive externalities (social benefits).

Another approach (Schwartz, 1994) is to stratify the client market as an *extension safety net* where public sector extension resources are targeted towards small farmers while graduating to fee for service extension, for large-scale farmers. In addition, the public sector should continue providing or financing the service to farmers, regardless of farm size, if the information pertains to public concerns such as environmental and social issues.

[In Chile, the government in 1970s discontinued the extension provision forcing commercial farmers to obtain extension services from private and non-private sources. Public extension services subcontracted to private sector are provided to small farmers with small degree of cost-sharing between government and farmer beneficiary (Ameur 1994)].

Swanson et al (1990) stated that farmer adoption of new technologies which influence farm profitability depend on farm size and land quality, input and output prices, access to credit, output markets and information, land tenure arrangements, availability of inputs and infrastructure, favourable government policies, degree of risk aversion and level of human capital. These factors normally discourage small farmers to adopt technology and thus, government intervention becomes necessary to resolve these problems.

[Most of them are generally located in remote, underdeveloped areas where it is unprofitable for the private sector to conduct business because of limited demand. Therefore, government intervention is necessary including the provision of infrastructure, improving access to credit, and promoting the growth of input and output markets which provide an enabling environment so the resource poor farmers could afford the production and create the incentives to adopt and demand for new technologies proposed (Umali and Schwartz 1994)]

3.8 Sectoral Participation in Agricultural Extension Systems

In response to these budgetary difficulties, some countries have initiated cost recovery strategies to recoup the cost of operations of public agricultural extension agencies, reorganised their extension units as public corporations or privatised their whole operations altogether (Benor and Baxter, 1984; Swanson et al, 1990). Simultaneously, there has been continued growth in private sector participation, involvement of NGOs and emergence of new types of linkages among the public, private, non-profit and non-governmental sectors and within the private sectors (Umali and Schwartz, 1994).

3.8.1 Public Cost Recovery Systems

To cope with serious fiscal constraints, many governments have begun charging fees for some extension services they provide to rural sector. The degree to which these cost recovery programmes have been pursued has varied across countries. In Colombia and China extension is still fully financed by the government, but provision has been decentralized to the municipal and county levels respectively.

In the Netherlands, public representatives function as extension consultants charging beneficiaries for their services. Following the MAF's reorganisation and restructuring, private sector pay 50% of costs and another 50% is funded by subsidies as government divests from extension activities. In New Zealand, the Advisory Service Division (ASD) commenced cost -recovery efforts in 1986 and by fiscal year 1991, 90% of all costs should have been covered by private contracts (Milligan, 1996)

In Norway extension services are provided by private extension representatives but costs are partially subsidized by the government (Ameur, 1994).

Cost-sharing was instituted with farmer groups or circles. Public sector extension officers were given additional administrative tasks which affected their extension activities. Farmers complained to the government regarding the unavailability of extension staff to solve their problems. Government agreed to partially fund the farmer circles in paying salaries which is a 50:50 cost-sharing arrangement, with the remainder funded by farmer membership fees.

In Mexico extension services are subcontracted by the public sector to private consultants but the proportion farmers pay is a function of their ability to pay (at least 50% of extension costs). In some countries public sector extension agents undertake unofficial cost recovery activities (Ameur 1994).

In Educator, extension agents sharecrop with farmers groups. Farmers provide land and labour while extension agents supply inputs and technical advice. Labour, other costs and output are shared. Sharecropping serves as demonstration plots and gain wide coverage which increase staff's credibility by learning from farmers whilst farmers have access to inputs and information.

3.8.2 Private Extension Systems

The concept of privatization emerges when countries are confronted with difficulties of controlling government budgetary deficits and accumulated foreign debts imposed by publicly funded extension. Over the last two decades, many governments offered subsidies and price controls on food marketing and distribution of agricultural inputs/outputs and credit, resulting in substantial reductions in efficiency and productivity with little benefits to the disadvantaged farmers. Both the financial and trade sectors have been dominated by public sector monopolies in many instances. According to Ott and Hartley (1991), government interventions have impeded the development of private sector and agri-business institutions in economic development. Government subsidization has suppressed economic growth and created additional obstacles to market liberation and deregulation and has also imposed financial pressure upon government budget and taxpayers (Silverman, 1992). According to Ramanadham (1988), subsidies are necessary for low-income farmers to provide them with lower priced inputs and access to the market and a range of services in a poor supporting environment. There is no justification, however, for subsidizing agricultural inputs as subsidies benefit the relatively well-off farmers, and hence lead to adverse distributive effects while their abandonment might not affect agricultural output seriously.

In the 1980s, many countries moved to privatization as an instrument to implement their macro-economic reforms and restructuring. Governments initiated structural adjustment programmes that transformed their state-dominated economy into an export-oriented one (Saunders and Harris, 1994; Gayle and Goodrich, 1990; Kettl, 1993). The Agricultural Sector has played a key role in the economic recovery of these countries (Silverman, 1992). In Chile, for example, structural adjustment of agricultural research has a significant impact (Venezian and Muchnik, 1994).

National agricultural research system (NARS) is competitive and self-financing which decreases public expenditure and involvement. Private research institutions are involved in technology transfer that reduce the government wage bill. They contribute to research expenditure and that becomes an important source of research funding. This has led to the elimination of subsidies, import restrictions and domestic price controls but incentives are given to the private sector as state marketing firms divest. High technology contributes to improved agricultural exports and rural poverty alleviation. But reform has deteriorated key research facilities, declined public support for staff training and unclear national research policies.

Some countries moved to privatization due to extensive criticisms directed towards public extension systems, and unwillingness of donors to subsidize public sector recurrent expenditures (Van Den Ban and Hawkins, 1996). But other countries have already restructured their public extension through adoption of “user pay” extension. For example, in New Zealand, internal restructuring and privatization of Ministry of Agriculture (MAF)’s extension function. Milligan (1996) has indicated that:

Advisory Services Division (ASD) as now operates as Agriculture New Zealand Ltd to coordinate technology development and transfer. Many private consultancy firms and research institutions have emerged with Agriculture New Zealand being the largest. Private consultancy service has been effective and affordable. MAF is involved in policy making, and environmental and social issues which lead to improved staff management and accounting systems, and reduced budget for staff and administrative costs, ASD is fully self-financed. Staff are employed on a contract basis that improves their accountability and responsibility. Performance measures and rewards are based on achievement of results. Public funding has been redirected to various funding bodies so they can deal directly with farmers that abolish the price supporting schemes, subsidies, credit (also cited in Sandrey and Reynolds (1990)).

Many countries moved to private sector extension due to growing commercialization of agriculture (Van Den Ban and Hawkins, 1996). According to Rahman (1994),

commercialization is a vehicle to solve major socio-economic problems faced in the agriculture sector, if planning is approached in a holistic and interdisciplinary manner that connect the agriculture to supporting services. Farmers could be educated in the field of agricultural marketing and commerce, entrepreneurship and agribusiness and support the role of farmers associations, cooperatives and non-governmental agencies, depending on land tenure systems and government incentives. In addition, commercialization cannot be successful if there is a lack of an integrated approach, an absence of a national commercialization policy and non-existent institutional linkages and networkings, lack of coordination, and poor monitoring and evaluation mechanism. Thus, a conducive policy and an institutional environment are important but these are overlooked by agricultural planners and policy makers.

Extension service in some countries has been decentralized as a step towards privatization. Farmers have been given training about the privatization concept. Farmers express their concerns on how extension would operate and define the priority services they need and be ready to contribute financially (Ameur, 1994). Decentralization improves management efficiency and effectiveness of economic and social development programmes through macroeconomic and fiscal policies. Such policies reduce public sector deficits, avoiding the congestion in public administration, communication and unanticipated problems. Despite the speculation that decentralization might only serve political interests (Silverman 1992 also cited in Flaman (1996)).

The reorganization of Tanzania’s public sector in 1983 is due to criticisms towards multiple objectives. Following the reform, there is an improved accountability,

effectiveness and efficiency of government operation, effective integration of government programmes that assist village socio-economic development and equitable income redistribution.

3.8.3 Impact of Privatized Extension Services

Many countries have adopted a series of private extension approaches to meet farmers' needs and reduce the government spending and intervention. Some countries shift from public extension to a mixed element system accompanied by some amount of public extension cost recovery service. For example, in Indonesia, drugs distribution is provided by private firms as part of the technology sale. According to Kartamulia et al (1995),

Extension service was centralized but drugs were rarely available to farmers due to lack of transportation, low farmers' knowledge and lower staff availability. Establishment of a private Animal Health Delivery Network (AHDN) improve the drugs distribution through creation of better linkage between public extension and private firms. High degree of competition lead to affordable service and many farmers receive drugs at reasonable prices. Information channels used include written information, posters, farmers meetings, radio, on-farm demonstrations. Private traders have incentives to maintain a business relationship with farmers. Hence, they provide effective services rather than public extension workers which eliminate the subsidies on drugs. The scope of private sector involvement in extension is promising.

In other countries, as the private sector expands, governments gradually divest from extension activities. But this might cause socio-economic problems (unemployment) if the scope of the private sector is limited. For example, (Ameur 1994) in Portugal, privatization of the MAF's extension function, except for research and experimental agriculture, has taken place.

Following reorganization, government agents have gradually joined the private sector but employment opportunities are limited. Such a relationship depends on the characteristics of private sector; policies, infrastructure and political relationships in a country; and degree to which information is required by farmers. This complementary public/private extension efforts encourage the spillover of technologies from high to low value commodities, depending on financial capability and participation of small farmers. If they do not participate, complementary of two services is not successful (Schwartz, 1994)

3.8.4 Lessons Learned From Privatization

Apparently, many countries have learnt lessons from their national economic development over the past decade, particularly in terms of the government's dominant role in providing agricultural extension which has led to serious budgetary deficits

and accumulated foreign debts. In response to budgetary difficulties, some countries have initiated cost recovery strategies and promoted the role of other major players of agricultural extension, for example, private sector firms, NGOs, farmer associations, cooperatives in addition to publicly funded extension services as part of macroeconomic restructuring and reform. Undoubtedly, countries adopting the private extension services are able to resolve their government budgetary deficits through the adoption of macro-economic and fiscal policies prior to the reduced government spending and intervention and the promotion of the private sector role in economic development activities. The government's commitment is that the public sector could be slimmed down to operate it more efficiently while providing unique opportunities from other key players of agricultural extension services.

However, going to the private sector is a time consuming and difficult process because it depends on how strong competition is (Ameur, 1994; Antholt, 1994). In fact, the feasibility and success of private enterprises could be influenced by the nature of crop, commodity price and pricing policy, land tenure, macro-economic policies, price supporting systems, competition in extension markets, size and growth rate of farmer demand for paid extension services. Farmer demand varies with different types of farmers. For example, the profitability of private consulting firms are dependent on the costs and returns of extension they provide (Umali and Schwartz 1994). Thus privatization is dependent entirely on the above-mentioned factors particularly the government support in terms of policy formulation. The private sector, for example, cannot be sustainable without government incentives during the transitional period. Fortunately, private extension services promote the agricultural commercialisation and relieve the financial pressure upon the government but can lead to more social costs and environmental hazards. Such economic reform and restructuring reduces the government roles and responsibilities enabling government to concentrate on policy making, human resource development, institutional and infrastructure development (Silverman 1992).

3.8.5 Conclusion

Other countries over the last decade have adopted the role of private extension services as a result of government strategies to resolve budget constraints. Private sector deals with commercial producers while the public extension service is concentrating on rural disadvantaged communities. Consequently, the complementary

extension services reduce the government funding on operating expenditures, bureaucratic control and political intervention in extension activities. They fall into Rogers' *Third Generation Model*, with government, non-government organizations and private sector all involved in extension programmes.

3.9 Chapter Summary

Many countries have learned lessons from their past experiences with public extension which has placed them in a difficult financial situation as a consequence of unrealistic assumptions made by donor agencies and recipient governments, local bureaucrats in particular. In addition, many public systems have been "*top-down*" and inefficient in meeting farmers problems and needs. While the public extension is the only provider in some countries there are other possibilities such as private firms, farmers' associations, cooperatives and NGOs. Public extension systems are usually too expensive to be sustainable, have limited impact on improving the rural life, lack economical and financial sustainability beyond the project life and have little integration of social issues with farming issues. Bottom-up extension approaches resolve some of these issues, for example, the community participation in decision making process but may demand government intervention in terms of financial support and impose financial pressure upon the government budget. As a consequence, some countries have adopted complementary public/private extension, sharing the costs and responsibilities and offering effective and affordable extension for a range of different types of farmers.

4.1. Introduction

This chapter outlines the emergent process of the research methodology. The conceptual framework identifies the parameters for the research. Preliminary research makes use of key informants to prioritize and contextualize variables. The research methodology section identifies the need for an exploratory qualitative methodology, drawing from techniques of both survey and case study approaches, adopting the RRA/PRA methods to enlist an eclectic array of research tools.

4.2 Theoretical Concept of Research Methodology

Research methodology refers to the process, principles and procedures adopted to research problems and to seek answers (Bogdan and Taylor, 1975). The choice of research methodology and field data collection depend on the study's objectives and information required to achieve these objectives but it can be influenced by researchers' assumptions, interests and goals (Sarankos, 1993). *The study question tested in the Samoa context is to determine the most appropriate system of agricultural extension to meet the needs of farmers.* Generally, there are two opposing theoretical perspective in social science, namely phenomenology and positivism. The positivist or mechanist researcher uses more intensive quantitative methods while the phenomenologists endeavour to understand the phenomena through qualitative methods. These two methods can overlap each other but they have distinct differences (Bogdan and Taylor, 1975; Glassner, and Moreno, 1989).

Quantitative Approach

Quantitative Research is deductive where hypotheses are tested for acceptance or rejection. Quantitative methods as used in this study are survey questionnaires, that concentrate on numerical values and attributes and use statistical analysis (Sarankos, 1993). These quantitative data are collected through random sampling that generalise the relationship between two variables. For example, comparing a highly centralised extension system in Nigeria and a decentralised system in Brazil gives opportunities to observe what is predicted, making credible claims for having observed a system level relationship (Qyen, 1990). However, such approaches might create some

problems, for example, researchers can be biased or respondents may misunderstand about the scope of questionnaire. In addition, the structured questionnaire is unlikely to assess people's attitudes, perceptions, circumstances and experiences comprehensively due to its rigid and statistical nature. The preparation of a survey questionnaire is costly, data analysis is a time consuming process and needs technical expertise. Data collected, for example, needs to be coded for the statistical analysis and also if it is a large sample, a computer package would be required for data analysis (CIMMYT, 1980; Chambers, 1991; Sarankos, 1993; Kumar, 1994).

Qualitative Approach

Qualitative approaches can represent the real world and are iterative so that the phenomenologist or humanist gains a general understanding from a target population's perspective. The most widely used methods are in-depth interviews, group interviews, participant observations, semi-structured interviews, and personal documents. Qualitative research is inductive and hypotheses are developed through the course of the research (Bogdan and Taylor, 1975). Although in-depth interviews are expensive and time consuming, qualitative methodology puts researchers in natural settings and allows in-depth investigations of respondent's opinions, beliefs, attitudes. Higher flexibility allows researchers to expand the discussion on newly emerging matters during the interviews (Casley and Kumar, 1988). However, investigators can be biased leading to results being unrealistic and valueless. Qualitative research methods have increasingly been used worldwide in evaluation research by anthropologists, sociologists and health and education workers to investigate the public's perceptions towards the effects of certain programmes (Chambers, 1994).

Both qualitative and quantitative approaches are utilised in this study. Surveys and case studies are the principal approaches with RRA/PRA methods. Data collected and analysed includes primary data (from interviews) and secondary data (documents, references, reports).

4.2.1 Survey Approach

This study is exploratory qualitative research using a survey approach that incorporates both qualitative and quantitative data. Semi-structured questionnaires (checklists) are used to interview policy makers in addition to the secondary data. The

aim is to seek the government decision makers' perceptions on what possible options there are for the extension service consistent with government policies.

Rationale for Survey Approach

There are several reasons why the researcher selected the *semi-structured survey*, including the fact that past studies had adopted similar methods. For example, Rehman (1984) adopted the "*Quantitative and Qualitative Approach*" using a semi-structured questionnaire to investigate the farmers' perceptions towards the effectiveness of the MAFFM's extension service in Samoa. Recently, Lubett (1997) used semi-structured surveys to conduct interviews with MAFFM's administrators to find alternative extension systems for Samoa. Furthermore, Foo (1994) and Leonard and Ooi (1995) adopted the "*Qualitative and Quantitative Approach*" for their Agricultural Sector Review Studies, using the semi-structured surveys to conduct interviews with policy makers and budget planners. All these researchers adopted the combined "*Qualitative and Quantitative Approach*" to improve the reliability and validity of their findings.

However, there has been no systematic investigations of Samoan farmers' needs and problems with the aim of assessing the sustainability of the MAFFM's extension function. In fact, previous researchers gave more emphasis to policy makers than to the farmers, which is biased. This study focuses on gathering information through interviews with key informants through face to face and group interviews, meetings, seminars, workshops and phone conversations. This study also utilised secondary data such as letters, agendas and minutes of meeting, written reports, records, survey data and census as cross-referencing to avoid any bias from respondents.

4.2.2 Case Study Approach

A case study is an empirical inquiry that investigates a contemporary phenomenon within its real life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used (Yin, 1994).

Case studies can be used as an explanatory, descriptive and exploratory strategy in evaluation research that explains the casual links in real life interventions that are too complex for quantitative surveys or experimental strategies. The case study has a unique ability to deal with a range of evidence such as documents, artifacts and interviews. Moreover, direct observations and participant observations and informal

manipulation can occur. The case study can also overlap with an experimental approach, i.e. when the investigator can manipulate behaviour directly, precisely and systematically. This can occur in a laboratory or field setting where the term “*social experiment*” has emerged to cover research in which investigators “*treat*” whole groups of people in different ways. Under these situation, the “*quasi-experimental*” approach is favourable because no control over the behaviour event is possible. In some situations, some research can be used (such as explanatory research) and in other situations, two strategies might be considered equally attractive. *For instance, a survey within a case study or a case study within a survey.* To this extent, the various strategies are not mutually exclusive. However, in some situations, a specific strategy has a distinct advantage. The case study needs to ask these questions “who”, “what”, “where”, “how” and “why” about a contemporary set of events (Yin, 1994).

This study use the exploratory case study approach for village case studies to determine farmers needs and why the MAFFM’s extension programmes have had limited impact on rural socio-economic development and factors influencing the adoption of technology. In the past, no researchers have had unique opportunities to investigate this problem in Samoa thoroughly although the problem is prevalent across the country. Previous investigators have never tried to determine exclusively what farmers expect from the extension. Even the FSP with its strong participative extension approach never resolve the problem (Lubett, 1997).

Rationale for Case Study Approach

Benefits of the case study approach can be maximized if the three principles of using multiple sources of evidence, creating a case study data base, and maintaining a chain of evidence are adopted. These principles help to deal with problems of establishing the constructive validity and reliability of a case study (Yin, 1994). All these principles are relevant to this study, particularly the following:

- (i) *use multiple sources of evidence* - this is a major strength of case study data collection, the opportunity to use multiple sources of evidence far exceeds that in other research strategies, such as experiments, surveys or histories. However, each of these strategies can be modified, creating hybrid strategies in which multiple sources of evidence are more likely to be relevant. Case studies also allow an investigator to address a broader range of historical issues but the most important advantage of using

multiple sources of evidence is the development of converging lines of inquiry, which is the *triangulation process*.

The Case Study Approach utilises some of the techniques that are associated with the RRA/PRA approach (See Appendix 1 & 2). These approaches are being used increasingly in Third World country situation and employ such methods as secondary quantitative data review, semi-structured interviewing, direct and participant observation and group interviews (Beebe, 1985; Chambers, 1985; Casley and Kumar, 1988). These basic principles and practices can optimise trade-offs and crosscheck the findings to avoid biases. According to Chambers (1985), RRA is a *quick* and *clean* method and RRA is being widely utilized in the analysis of agro-systems, natural resources, forestry and environment, rural development, farming systems research, marketing, organisations, social, cultural and economic conditions. Chambers (1995) argues that the investigators gain information and insights from local people and about local conditions. This information is a fundamental tool to their own planning as local people are not always involved in data analysis and decision making. The investigators would perhaps respond effectively to people's needs and priorities. Strategies to resolve farmers' problems are designed solely by practitioners without any consultation and negotiation with target beneficiaries in the community (Cernea, 1991).

Fortunately, PRA methods solve this problem by facilitating the sustainability and empowerment, more democratic decision making, maximum community involvement and utilizing indigenous knowledge. PRA is increasingly being used by government, non-government organisations, and aid agencies. However, Chambers (1994) suggests that the equitability of empowerment depends on who is empowered. In fact, those who participate and gain are often local male elite, while women and the weakened might end up worse off. Kumar (1995) stated that PRA methods allow the weakened participants to voice their views publicly if the researcher is not biased and/or community involvement is seriously considered. PRA methods encompass Moser's (1989) use of practical and strategic gender interests to empower women through gender analysis. This study adopted both RRA/PRA methods that are being used by FSD approach in Samoa, to increase the community participation in democratic consultations and negotiations (Lubett, 1997). Thus, case studies, using multiple sources of evidence essentially provide multiple measures of the same phenomenon

and are more highly recognised in terms of their quality than those that relied upon only single sources of information.

(ii) *maintain a chain of evidence* - which increases the reliability of information in a case study. Such a principle is based on a notion similar to that used in criminological investigations. The following prerequisites (Yin, 1994) should be satisfied to enhance construct validity and increase the overall quality of the case:

(a) report should have sufficient citation to relevant portions of the case study data base, for example, by citing specific documents, interviews or observations; (b) data base, upon inspection should reveal the actual evidence and also indicate the circumstance under which the evidence was collected, for example, time and place of an interview; (c) these circumstances should be consistent with the specific procedures and questions contained in the case study protocol, to show that the data collection actually followed procedures stipulated in the protocol; (d) reading of the protocol should indicate the link between the content of the protocol and the initial study questions.

4.3 Research Tools

4.3.1 Exploratory Stage

This stage is the beginning of the research methodology process where the researcher defines the scope of the research. This was started with a general literature review of the secondary information regarding the trends in agricultural extension systems, privatisation, commercialisation and community development in the world with respect to the Samoan context. Yin (1994) noticed that, to determine the questions that are important for a topic and to gain some precise information in formulating these, one way is to review the literature on the topic. This was very relevant to this study where an inexperienced researcher followed the same procedure to determine what is known on the topic.

The data collection for this research was undertaken in several stages. The first stage was conducted in New Zealand and involved reviewing the literature and secondary data available. For example, a review of the past efforts to strengthen the Agricultural Extension Service in Samoa was done firstly through reviewing all available relevant documents and reports; secondly, through informal discussions and phone conversations with other experts/consultants who are working on the same field in New Zealand. Few informal interviews were conducted with the Ministry of Agriculture & Fisheries (MAF) staff, private extension consultants from Agricultural

New Zealand Ltd and other consulting firms, former director of the MAFFM from Lincoln International Limited in Christchurch, and Samoan immigrants in Christchurch and Auckland who arrived here recently. Contact was made with the MAFFM executives to gain approval for the usage of government resources (vehicles, staff), preparation of itinerary and arrangement for interview schedule (Figure 6).

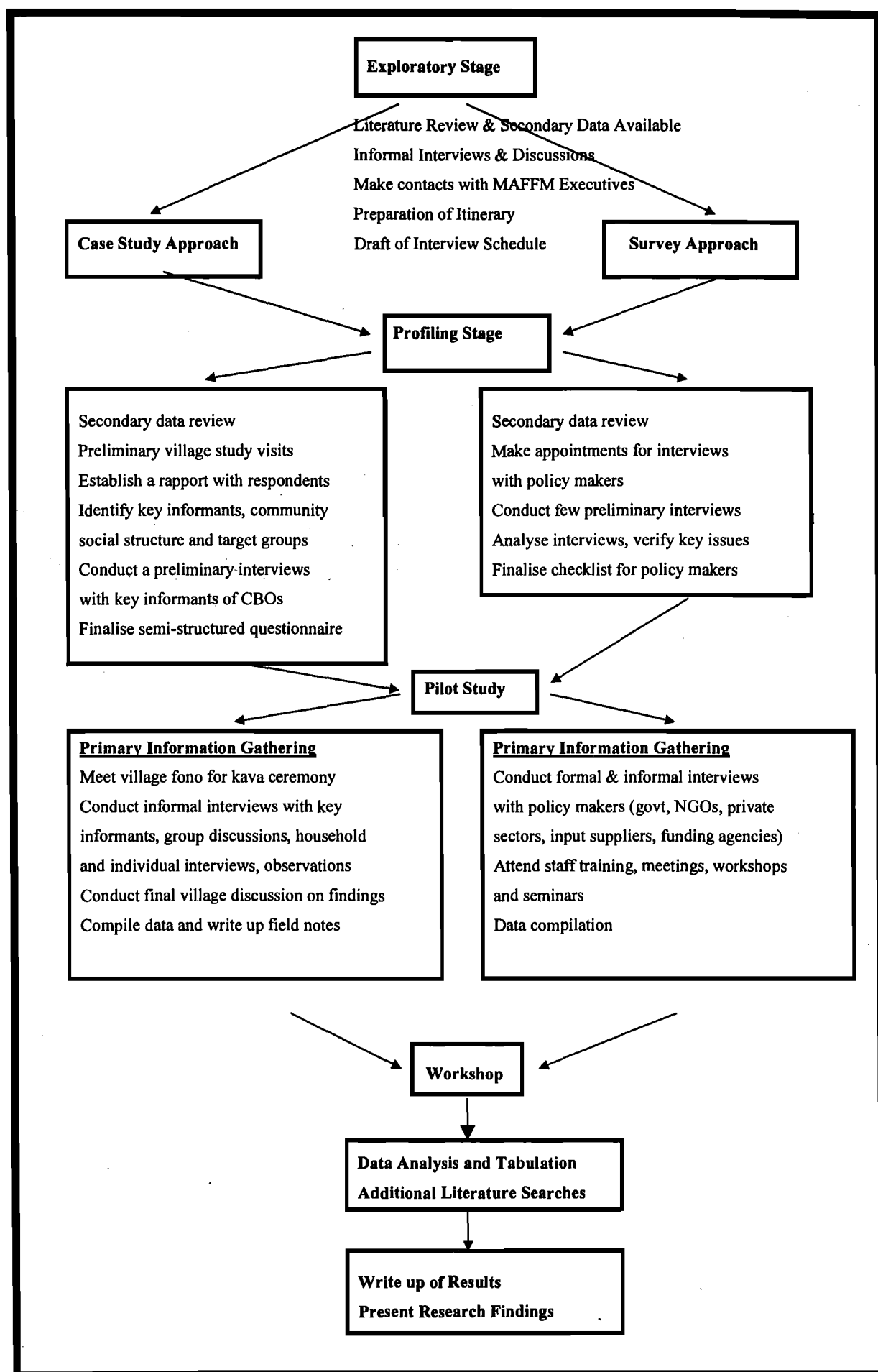
All this information was utilised to design a draft interview schedule. Various issues such as changes and impacts of new government policy on agricultural sector and rural development were identified. The concepts of agricultural commercialisation, diversification in economic development activities, privatisation, empowerment of women, socio-economic development, government budget which were discussed in the literature review were also incorporated into the schedule. This exploratory process provided sufficient background information to formulate a provisional analytical framework for the research.

4.3.2 Profiling Stage

According to Taylor et al (1990) this stage should to some extent be concomitant with the exploratory stage which includes the in-depth search of the village community context and policy makers background. To meet these criteria a period of fieldwork in Samoa was undertaken in July 1997 (Appendix 1). The MAFFM's senior staff were consulted on the research topic and four villages were selected for case studies based on the research objectives. Arrangements for preliminary visits to selected villages and appointments for interviews with policy makers were made.

Open-ended interviews with government policy makers, non-government organisations, donor agencies, private sector officials and farmer associations were conducted, in addition to the review of relevant published and unpublished reports/documents such as annual reports, surveys, agricultural sector reviews, budget estimates and National Development Plans to identify the government policies, strategies and resources for extension and to illuminate the impact of the MAFFM's extension service on people's life. Additional information about four villages was gathered through personal interviews and secondary data.

Figure 6: Outline of Research Methodology



The MAFFM officials from the Research and other divisions with their own small extension services were questioned about the current status of their services. Every attempt was made to gain insight into other related on-going projects that would have a bearing on extension activities. In this context, discussions were held with the FSP Team Leader about its contribution towards the sustainability of the MAFFM's extension service. MAFFM staff training, meetings, seminars and workshops were attended to understand their activities and future planning. A market survey on both islands was undertaken to study the market trend in supply and demand of both export and local agricultural commodities, and to examine the correlation between the rural farmers' inaccessibility to prospective markets and technology adoption.

Secondary data including the annual reports, agenda and minutes of meeting, and budget estimates were collected from both the MAFFM, Treasury Department, Ministry of Women Affairs (MWA) and USP IRETA Library.

4.3.3 Interviews with Officials

Appropriate officials were contacted and interviewed in Apia town. These interviews were conducted through face to face interviews using the checklist and phone conversations (Appendix 2). For example, interviews with Treasury officials were conducted regarding the proportion of the government budget allocations to MAFFM and Extension Division and perceptions towards the new budget system. The Public Service Commission (PSC) officials were asked about the conditions and real impact of the public sector reform on the agricultural sector. The ASC and private sector officials were interviewed to discuss their concerns over the proposed privatisation of the ASC's monopoly operation prior to the elimination of subsidies. The Development Bank of Western Samoa (DBWS) officials were questioned over the current lending policies for agriculture, and fisheries credits. The MWA staff were interviewed to identify their activities on meeting women's needs and promoting women's triple roles. The Ministry of Internal Affairs (MIA) officials were questioned to explain their concerns about the MAFFM's extension service and their activities on promoting the community development (Appendix 1).

These preliminary investigations contributed to the provision of additional information regarding suitable protocol and research techniques for the Case Study Approach in an indigenous Samoan context, and provided the researcher with an

overview of government policies and strategies, on rural village development, women issues, credit, government spending and intervention, and extension systems.

4.4 Research Techniques

4.4.1 Site and Sample Selection

In qualitative research, the most suitable site is where it is possible to find “experts” in the subject to be investigated and where it is likely to find a mixture of many different processes that are occurring (Taylor et al, 1990). The MAFFM’s extension service is the main technology transfer agency for farmers in Samoa. The focus of the research is to assess the extension services impact on rural people’s life and to determine the factors influencing technology adoption. Four descriptive village case studies (Siufaga and Samalaeulu selected from Savaii Island, Malaemalu and Taelefaga from Upolu Island) were undertaken to investigate the perceptions of village communities towards MAFFM’s extension service, using the RRA/PRA techniques.

These villages were involved in different MAFFM’s extension systems and price supporting programmes (bonus scheme), and located in different geographical areas (See the Appendix 4). The selection criteria of village case studies is detailed in Chapter 5 and Appendix 2. Swanson et al (1990) advocates that the success of technology adoption by a diverse range of farmers is dependent on these factors such as land tenure, economic status, credit, cultural, social and religion obligations, geographical difference and educational level. Farmers in Samoa are not a uniform population. Farmers belong to households (husband, wife, children), women’s committees, youth clubs, young men’s groups and other informal groups, and are not all involved in extension programmes. They form a multitude of village populations, with different educational background and skills, training in agriculture, farm business enterprises, work experiences, extension approaches, institutional links and networks and clienteles. A decision was made that the interviews should begin with experienced Siufaga village farmers in order to gather initial information and insights, and to familiarise the researcher with any new issues. The research is to assess the impact of various extension systems on agricultural development, household income, food security, socio-economic status, community development, women in development, complexity and diversify of farmers. The total number of households selected was 16. Five (31%) of households were from Siufaga village (heads of the

household, 2 were farmer group members during the FSP, 1 was a small farmer, 1 was a former group member and 1 was womens' committee president), 3 (19%) were from Samalaeulu village (headed by 1 subsistence farmer, 1 progressive farmer group leader, and 1 women farmer), 3 (19%) were from Malaemalu village (headed by 1 womens' committee president, 1 commercial farmer and 1 youth club president) and 5 (31%) were from Taelefaga village (headed by 1 women farmer, 1 semi-subsistence farmer, 1 Congregational Christian Church's youth club patron, 1 womens' committee president and 1 former Baptist's youth club member. From the 16 households interviewed, 9 were headed by males and 7 were headed by females, thus the women representing almost 50% of the sample (Appendix 3, Table 2 & 3).

4.4.2 Pilot Study

A pilot study was undertaken on two day trips to four village sites (Siufaga, Samalaeulu, Malaemalu and Taelefaga). The pilot study contextualised the issues that had arisen in the literature, and further identified methods of incorporating local knowledge into the research process. It was also culturally appropriate and allowed the community and researcher to establish rapport. Identification of salient variables during the exploratory and profiling stages helped to focus the research, showed its realistic boundaries to work within, identified the various gaps, fallibility's and strengths of data collected and their implications for the reliability and/or validity of the analysis.

For the pilot study, the researcher was accompanied by district extension officers and in each village, key informants (pastors, school teachers, women, youths and matais) were identified. These people have access to information regarding demographic features in the village area, socio-cultural features in the community and social structures (Taylor et al, 1990). Village representatives were invited and participated in the village council meeting to explain the topic and verify criteria. The pilot study highlighted the need to include the village women's committee, village leaders (matai), youth clubs, formal and informal groups as target groups. A good rapport was established through frequent discourse with the village key informants to build up trust with interviewees. The researcher created a dialogue with all parties concerned and encouraged a full community participation with the district extension officer's assistance.

The pilot study enabled the researcher to assess the issues involved with extension approaches and programmes appropriate for village community development, cultural acceptability of government rural development programmes, and attitudes towards the researcher. Community development needs and problems were identified. Following the pilot study, the questionnaire was reviewed and redefined based on the above-mentioned issues.

The Case Study Approach was implemented adopting the RRA/PRA techniques following the completion of the preliminary research (pilot study and final draft of the semi-structured questionnaire).

4.4.3 PRA Procedure for Village Case Study

1. The researcher and the district extension officer visited and met each village council (fono) for a kava ceremony at which the village people were officially informed about the purpose of the research and subsequently formal consent was granted to conduct the case study. The researcher stayed in each village for 3 days and used a range of research techniques.
2. Smaller meetings, discussions and interviews with interested groups of 6-8 persons (women committee, farmer groups, youth clubs, Sunday school children, matais) were conducted after the kava ceremony and were followed by a period of debriefing during which the subjects were invited to ask questions regarding the interview and the interviewer.
3. Household interviews, which included all family members (husband, wife and children) were conducted in the evening to be more convenient for them and thereby to ensure their full participation when they returned from the farm work, school and community activities (See Appendix 3, Table 3). Household interviews normally took at least 2 - 3 hours and each household was interviewed twice as a crosscheck. The interviews were to determine the impact of the extension programmes on household income, food security and standard of living. The first household interviewed in Siufaga village, is headed by a progressive farmer group leader with great extension experience. As the researcher had not possessed a previous experience with the PRA method, a decision was made to use this first interview as an opportunity to practice the method, assess the results, and make adjustments for the following interviews. The SAO of Savaii Island, an experienced officer in RRA/PRA methods, was invited to participate in the first

interview as a facilitator to make assessments and comments for improvement. This strategy proved successful in improving the researcher's skills as several changes were suggested for the next interviews. The second interviewee was a female full-time farmer and treasurer of a farmer group from the same village. As she knew how the MAFFM's extension service has operated in Samoa, her interview revealed the impact of extension programmes and other government services on women's' triple roles and more insights on gender issues. The following interviews were with those farmers who are indirectly involved in the MAFFM's extension activities. In this case, the idea was to identify how innovation has been diffused from progressive farmers to ethnic groups of the village community. In each case study, a final wrap-up village meeting was conducted to discuss the study findings and some implications for the community development.

4. Direct and participant observations and interactions with village community-based organisations, for example, women committees, farmers' groups, youth clubs, leaders, teachers, pastors and school children including transects and group talks (Chambers, 1994), were conducted in the company of the district extension officer following the open-ended interviews. Group interviews were tape-recorded and photographs of respondents, farms and houses were taken if there was permission granted and/or request from the respondent. The responses were then segmented into group issues and colour coded as the interviews progressed to identify new areas of inquiry that were influencing the community participation in the MAFFM's extension programmes. Because of the participatory nature of this study, it was difficult to collate and analyze all data on-site. Such techniques gave all sectors of the community an equal opportunity to participate in the decision making process. Interviews took place at culturally sensitive and familiar places such as homes, meeting houses and work environments at the convenience of respondents to ensure the full participation and cooperation of all community based organisations, especially the vulnerable groups in the research process. Interviews should be conducted in a manner in which all participants could be involved (Chambers, 1994; Taylor et al., 1990).
5. Interviews were tape recorded and in note format in order to smooth the flow of conversations and to allow the formulation of follow-up questions and additional comments. Interviews varied from 1-3 hours, depending on issues being discussed. Field written notes were attached to the interview transcription as part of the

project data. After each village case study, the research design was reviewed and modified accordingly to ensure more evidence was gathered from multiple sources.

6. Policy makers interviewed were informed that background information was needed, followed by questions relating to the impact of the MAFFM's extension service and factors influencing the technology adoption. Dealing with personal interviews requires the confidence that information would not be misused. The policy makers were assured of confidentiality and privacy before the interview proceeded and asked if they wished to participate. The interview was conducted if the respondents answered in the affirmative. Several measures were used to ensure confidentiality and privacy including the storage of tapes and interview files in a secure place; and maintenance of respondent's anonymity and suppression of names.
7. In the sixth week, a one day workshop attended by government agencies, non-governmental organisations, private sector, farmer associations and representatives from four villages was conducted with the assistance of two facilitators to address various emerging issues through group discussions and debate.

4.4.4 Data Analysis

Two phases of data analysis were undertaken. The first phase was the transcription of each interview. Then the transcriptions and written notes were read, to identify emerging themes and to formulate hypotheses. The responses were then segmented into issue-groups and colour coded, then later tested for confirmation or rejection. The second phase was intensive data analysis when data from interviews, field notes and observations were analysed in detail in descriptive and table forms using the Excel and Word 6 computer packages. The intensive analysis process was undertaken when the results, discussion, conclusions and implications were written (Chapter 6 & 7).

The "*Time Series*" analysis was adopted to investigate the trend in budgetary allocations to MAFFM and Extension Division in the last three decades. This research also identified why Samoa Government has intended to look for other alternative extension systems (Leonard and Ooi, 1995; Lubett, 1997). This study followed the "*Chronological Structure*" by presenting the case study evidence in chronological order. The researcher studied the past, present and future trends in agricultural extension experienced by farmers and policy makers in Samoa.

Moreover, this study used the “*Comparative Methodology*” analysis, suggested by Qyen (1990), that allowed policy makers to compare the MAFFM’s extension service in Samoa with other countries’ public extension restructuring and privatization. This created the public debate between politicians, bureaucrats and village people which increased their understanding of the research topic. This study endeavoured to draw the general public interest and alternative perspective of rival propositions. Results of this study would be widely communicated prior to changes in government policies.

4.4.5 Limitations, Strengths and Research Bias

The qualitative research method chosen for the study has some weaknesses. The case study approach represents the reality of the subjects directly involved in the research. There are, however, traditional prejudices against the case study approach, as recognised by Yin (1994). The case study strategies provide little basis for scientific generalisations. “*How can you generalise from a single case?*”. That was why this study conducted many village case studies. In addition, the case study has allowed the researcher to address a range of historical issues and use a multiple sources of evidence by adopting triangulation methods, creating a case study data base and maintaining a chain of evidence to establish a constructive validity and reliability of a case study.

Another complaint about the case study is encountered by Yin (1994) that they are too long and result in massive, unreliable documents. As a matter of fact, this complaint may be appropriate to those case studies done in the past but this is not necessarily the way case studies are currently conducted. This had justified the adoption of the RRA/PRA methods using the triangulation process for village case studies. The survey approach for policy makers was, in addition, used as a cross-referencing which connects both farmers and policy makers’ perceptions towards MAFFM’s extension service to identify its problems, potentials and implications. Furthermore, there has been lack of rigor in case study research if the investigator shows sloppiness and expresses biased views to influence the findings and conclusion (Yin, 1994). The researcher’s 10 years of personal experience in agricultural extension may lead to the manipulation of the research process and preconception of results, however, a conscious effort was made to avoid biases, by fully informing interviewees, hoping to assist their confidence, knowledge and authority. Additional people were questioned again in a second round of interviews, follow-up meetings with villagers, workshop

with policy makers, donor agencies and few farmers, and the MAFFM staff survey according to new issues arising from the research process and the data analysis as cross-checking. No third round interviews was necessary.

4.5 Chapter Summary

In this chapter, the research methodology used in this study is outlined and rationale for its use is also discussed. Two opposing theoretical research approaches are discussed, phenomenology and positivism in which the survey approach for policy makers and case study approach for village communities have been amalgamated by adopting the RRA/PRA techniques. The research tools and techniques are outlined, and the site and sample selection are described, as is the process of data analysis. The research techniques used in the study have been used extensively in developing countries by donor agencies to identify the community needs and priorities, address the various issues of development (social equity, equitable income redistribution, economic status, rural poverty, gender, environmental, government policy) and construct some concrete strategies to resolve them. Such techniques have been prioritised to facilitate the full participation of target beneficiaries in democratic negotiations and open dialogue particularly the PRA techniques (Taylor et al, 1990; Moser, 1993; Chambers, 1994).

5.1 Introduction

This chapter presents the results from the field work. Section 5.2 outlines the policy makers' perceptions towards the impact of new government policies on the MAFFM's extension function. Section 5.3 contains the results from the case studies where the impact of MAFFM's extension upon four villages was assessed and the factors influencing the adoption of technology by villagers were determined.

5.2 Perceptions of Policy makers

5.2.1 Efficiency of MAFFM's Extension Service

In the past, government relied on the public sector to provide the impetus for economic growth but this approach has proved inefficient and unproductive. Treasury and PSC officials indicated that, in government departments, people are poorly motivated and their work performance is low. *"They read newspaper and are asleep on benches in the working hours. Its not their fault but poor management"*. The MAFFM officials admitted that *"extension service is controlled by personal agenda, that is why too many services. If agriculture sector need to develop, wise to pool them into one management system"*. The MIA officials complained that *"EOs quality is low and they are true liars, they don't understand about research results and they deliver wrong message to farmers. Present system should be restructured, removing stations because its not useful and waste of money, mass media is cost-effective"*. Commercial producers argued that: *"never know extension service is exist. Who's going to push EOs working with villages? Growers will listen to exporters but room to restructure it using the existing resources"*.

Treasury, MWA and PSC officials expressed the view that the new Output Performance Budget system would improve the efficiency of MAFFM's extension function in terms of mobility and accountability and ensure efficient allocation and utilisation of government resources. The Director of Agriculture agreed that *"If EO can't achieve the outputs requested, then his/her service should be cut. Why government should waste its resources, if performance can't produce any output"*. However, the EOs are worried that the new budget system might reduce the efficiency

of the service and they may lose their jobs if there are budget cuts and staff redundancy. *"We support the new budget system but oppose any plan for staff redundancy and budget cuts on physical resources and operating costs"*. The MAFFM officials wanted Treasury and budget planners to be sensitive and selective in the determination of services to review. *"Rural communities are a crucial part of the country. If there is budget cut, remove the casual workers (drivers) its waste of money, but not vehicles and permanent staff. Vehicles for EOs are necessary to visit farmers. Government shouldn't make its plan across the board"*. Treasury and PSC officials responded that the Government's decision is to allocate and utilise its financial resources more efficiently and productively. *"We must accept that our budget resources are limited, fewer outputs and better performance is our goal"*. The MIA officials indicated that *"new budget systems can motivate the departmental heads to develop appropriate methods of financial controls"*. However, there are concerns that social problems (crime, urban unemployment, poor standard of living) would grow, if there were staff redundancies and removal of casual workers. *"No lands in town areas for agricultural developments. Where they are going to work for family support and children's education, few companies can provide jobs"*. The MAFFM officials argued that *"contact with rural communities will be worse if there are budget cuts. No doubt that many farmers will be left out"*. There is also the situation where farmers desperately need the EO for emergency cases as happened after the hurricanes of the 1990s. *"Mass media is ineffective in terms of feedback and technology adoption"*.

5.2.2 Alternative Systems of Agricultural Extension

The MAFFM officials are concerned about the private sector and that it cannot improve the service in terms of mobility, farmer participation and agricultural production as the costs of service may be unaffordable. *"Privatisation is not the answer to this problem, real issue is to find out what part of service to review"*. Treasury officials admitted that new government policy, however, will create its partnership with private sector, NGOs and farmers associations while exploring other systems of agricultural extension. The MAFFM officials insisted that *"it is the wrong time to restructure extension, too ambitious in the short period but long-term is acceptable, farming systems procedure is cost-effective"*. The Agriculture Store Corporation (ASC) officials argued that both research and extension need to be strengthened. *"We can't blame the extension service that is ineffective, look at*

resources available and government support. If research is improved, extension will be effective". The MAFFM officials contended that "extension service shouldn't be privatised, one of services that government has to provide". However, the EOs argued that if the government opts to continue the present system then it will need to put in enough resources. "No point to implement it if government is unwilling to support it. We don't have enough resources (staff, vehicles), no living allowances, poor extension stations, shortage of fuels". The MIA officials complained that the service is ineffective, for example, the FSD approach has not been successful without government support and strong coordination with other agencies leading to questionable community participation. "Right approach is channel through us, present extension system must be restructured and that grant enough support on research and allow private firms to provide their own extension services". The MWA officials suggested that "to resolve women committees complaints of no contact with male EOs, more female EOs must be worked with MWA staff to improve women micro-enterprise business skills".

5.2.3 Promotion of Private Extension

Treasury officials believe that new economic policies would create unique opportunities for private companies (Wilex Marketing International, CCK Ltd and ASC if privatised) to provide their services and relieve financial pressure upon the government. Private sector members indicated that "We support the government initiative but need initial consultations 'cos we can't survive without government support especially in transitional period, we don't have money to start with. Anyway we have already provided free service to our clients without government incentives". They argued that the MAFFM's extension service is unreliable and ineffective in terms of delivery. "Staff must be well-educated and need integrity that, good system to avoid abuses of government resources". However, the MAFFM officials are concerned about the costs of service that might be unaffordable and not benefit all farmers. "Nobody will adopt innovation if they have to pay for it. Urban and overseas migration will be worse which will result in lower supplies of agricultural labour force. People will look for jobs as the cost of service and farm inputs are high". The MAFFM officials contend that there is, without doubt, a role for private firms, NGOs and farmer organizations to provide the extension services in terms of sustainable economic growth but there is still a room for the public sector. "We can't compare us to Australia and New Zealand as recommended by ADB consultants. Private

extension is not successful in Australia but in New Zealand with many difficulties. Service is effective and affordable by commercial farmers. As compared to Samoan context, most farmers are semi-subsistence and can't purchase fertiliser to develop cash crops, they normally rely on government assistance".

5.2. 4 Privatisation of ASC and Elimination of Subsidies

The MAFFM, PSC and Treasury officials indicated that new economic policies would abolish all government incentives and subsidies that aggravate the budget deficit. *"Subsidies and price supporting schemes (bonus) must be gone that still penalise us".* Furthermore, private sector officials criticised the ASC of competing unfairly with them on both input/output markets. *"ASC must be closed to allow fair competition".* However, there are concerns that such a strategy depends on how strong the competition would be. *"If there are only few companies, situation will even be worse than it is now".* The MAFFM officials contended that *"ASC is the only avenue to channel government assistance to farmers cos many are poor".* The ASC officials insisted that *"government mandate is to export quality banana as small-holders' banana is unacceptable. Subsidies are there for farmers, government needs them. If subsidies are criticised for being what they worth, same with incentives given to industries".* Commercial producers commented that *"mandate doesn't mean ASC should grow banana, farmers must be provided with technology but not compete with us. ASC has unfair advantage, access to funding, expertise and inputs".* The ASC officials contended that *"we have initiated banana trade with NZ markets to boost foreign earnings as to improve country's balance of payment. Perceptions of being unfair competition are quite wrong. We are brainwashed by consultants' preconceived ideas, be aware of ASC's privatisation conditions as commercial firms can't even sell agricultural products".*

In addition, there are concerns that production costs might be unaffordable and affect the agricultural exports. Since the cyclones, TLB and introduction of VAGST, rural people have experienced difficult economic times and there has being decline in household food security and income. *"People search for food to feed their families, No savings for developments 'cos of too many faalavelave¹⁰".* The Director of Agriculture argued that *"Samoan farmer is different from NZ farmer who invests on*

¹⁰ Faalavelave are classified as social collective system which can be presented in the form of kind or cash for family, church, village commitments.

farms for loan repayments and bank deposits for holidays. Samoa has a culture, farmer has responsibilities for village, church and family. He gives money to the pastor on Sunday, village contributions on Monday meeting (Aso Gafua) and supports his relatives, families and parents until they die".

The MAFFM officials insisted that bonus scheme is necessary to boost export crop production in a short period of time. *"Bonus after the cyclones is useful to increase the agricultural exports and reduce foreign debts but unnecessary to continue in sense of economic growth".* Treasury officials argued that *"bonus scheme is a waste of public money and leads to political corruption"* due to its improper implementation and management. *"put emphasis on output rather than input, bonus on planting is ineffective, plants are neglected after payment"*. The EOs complained that *"bonus scheme add workload to us and affect our programmes"*.

5.2.5 Development of Commercial Agriculture

Treasury and MAFFM officials are confident that new visions of economic policies would promote agricultural commercialisation to resolve the socio-economic problems (unemployment, low income and standard of living). *"Farmers can be trained in fields of agricultural marketing, entrepreneurship and agribusiness. More room is allowed for private sector, NGOs, farmers associations to play their roles in economic development that build a partnership between two sectors. Some of functions and services can be performed by private sector efficiently which create urban jobs to avoid social problems. Private firms deal with commercial farmers while government is working with small farmers to reduce its budget"*. The MAFFM officials argued that *"hardly any private sector being involved in village level, commercial agriculture doesn't work cos of too risky. For example, most crops are long term, land ownership and holdings are fragmented that limit its possibility, 7% of farmers operate on commercial basis. Government investment on commercial sector is a silly mistake 'cos 90% of activity is on village level. Need to consider socio-economic factors, especially rural people who have access to poor resources and supporting environment"*. Private sector members suggested that resource distribution between two sectors should be balanced otherwise the rich farmers get richer leading to social inequity, inequitable redistribution of income, and rural poverty. *"commercial sector must cater for export markets and traditional sector for domestic markets"*. There are concerns that Samoa is a small country which possesses

scarce natural resources “*commercial agriculture will motivate people to cut down forest that cause soil erosions, water pollution, and increased demand for expensive inputs*”.

5.3 Impact on Village Development

The focus of this study is to assess the impact of the MAFFM’s extension service on rural people’s life and to determine the factors influencing technology adoption. Four village case studies in Siufaga and Samalaeulu selected from Savaii Island, and Malaemalu and Taelefaga selected from Upolu Island were undertaken. The criteria of selection was that villages were involved in different MAFFM’s extension systems (T & V system, FSD approach) using the RRA/PRA and modified Participatory Learning Action (PLA)¹¹ techniques, and price supporting programmes such as bonus scheme and national livestock development. In addition, these villages are located in different geographical areas (See the Map) and the complexity and diversity of farmers (women, men, youth clubs, informal groups) means that the farmers in the case studies have differential accessibility to factors such as land tenure, input/output markets, socio-economic status, credit, religion and cultural obligations, educational and working experiences. This is important in determining the influence of these factors on technology adoption.

5.3.1 Siufaga Village: Case Study 1

Siufaga village is located on the eastern coast of Savaii Island, 10 km from Salelologa wharf (Appendix 4). It had a population of 786 (454 male : 332 female) in the 1991 census but that has now decreased as a consequence of urban migration following natural disasters (Appendix 3, Table 1). The village has a primary school and women’s committee house. Facilities include 2 trade stores, public telephone booth, post office and hospital in the village nearby. About 80% of houses are European style, water supply being either piped or well drawn and in 1995, electricity was reticulated throughout the village which improves mass media communication (radio, TV, telephone). Religion is important in village life, there are 3 churches (Congregational, Catholic and Seventh Day Adventist) and each has a youth club.

¹¹ PLA replaces the PRA carried out by multidisciplinary team as a result of high expectation of villagers. PLA is undertaken by field EOs alone to deliver the technology to farmers through village CBOs.

The village consists of various community-based organisations (CBOs), namely village fono, young men (aumaga), 2 womens' committees (Komiti a Tina & Koleta of Seventh Day Adventist (SDA) church) and youth clubs and other informal groups. Monthly village fono is held to discuss its policies and development plans including agriculture, access road maintenance, water supply systems, and village beautification. The Koleta has 8 members who concentrate on both church and farm development activities while Komiti a Tina consists of 30 members who are responsible for family health, village and church beautification.

In 1984, the village was involved in the T & V system which was later abolished as a result of financial constraints and little impact on people's life. In 1993, the village was selected as a pilot area to promote the FSD approach during the AusAID FSP. The RRA exercise associated with the FSP was undertaken by multi-disciplinary teams from MAFFM staff, however, farmers' complaints were mounted about the slow response from the PRA team due to a lack of coordination and communication among members. The PRA exercise was eventually undertaken by a multi-disciplinary team from MIA, MWA, DLSE and MAFFM followed by a number of visits over the last 3 years to identify a plan to address the village problems (Wood, 1994). Five farmer groups ranging from 10-20 members, each including women (about 25% of the group) were established during the PRA exercise. The Pulenuu¹² was involved as a group member but not as a government representative. On-farm research and demonstration plots were established with technical assistance from MAFFM's staff (extension, research, livestock, fisheries); and MWA, MIA, DLSE staff through a series of seminars, training, meetings and workshops.

5.3.1.1 Agricultural Commercialisation

Before the village involvement in FSP, 75% of household incomes were from agriculture and fishing and 25% from salaries. Households relied on agricultural and fishing activities to generate income. Taro was a main source of non-remittance cash but the TLB had a major adverse impact on the social status of villagers. Meanwhile, there has been a trend in farm improvement based on a determination to restabilise commercial taro production. The two kilometres from the access road to the village is intensively planted with short term crops and perennial crops (Table 3). Areas planted

¹² Pulenuu, a farmer and government representative in each village who is employed by the Ministry of Internal Affairs (MIA) as a liaison officer between the village and government.

on both sides of the access road have been increased. Taro is still grown by more than 60 households and there are in excess of 100,000 tiapula (10 ha) planted. Taro is grown commercially with contracts to a major store in Apia and exports to American Samoa. Some taro (variety Fili, highly TLB tolerant variety) have been planted and demand for planting materials is high. *"They offer to buy planting materials from MAFFM and start their own village demonstration plot"*. There is a need for kava planting materials (but many farmers are not really convinced because it is a long term crop) and more importantly for short term cash producing vegetable crops. Land shortage was identified as a problem during the PRA (Opio, 1994) but this has been somewhat overcome with cutting down old coconut trees (area planted to root crops). New stone and wire fences have been recently constructed to stop pigs damaging crops.

5.3.1.2 Crop Diversification and Sustainable Farming Systems

The concept of crop diversification has been highly adopted by farmers. The length of time that land is fallowed has decreased dramatically. Before the TLB, taro was grown on 4 - 6 ha of land, the fallow period was *"more than 6 months"*, in comparison to the present when it is *"less than 3 months"*. A range of crops is grown in small areas that assure the conservation of native forests and enough lands for other developments. Small areas of secondary bush remain fallow. Crop production has been increased in terms of yields and diversification regardless of the farm size. Average farm size is 1.5 ha compared to 4-10 ha before the TLB (GWS, 1989). More than 10 crops are planted including vegetable and pandanus by women (Table 3). Perennial crops (cocoa, coconut, banana) are intercropped with short term crops. *"We used to grow three crops, now its more than 9 crops"*. About 10 new cassava varieties from the PRAP¹³ are grown by 2 farmers as taro substitutes. Crop diversification technology is crucial to sustain the traditional farming systems (mixed cropping) and conserve the vulnerable environment. One respondent said: *"Mixed-cropping save money on weed control, grow many crops on small areas. No need to clear more lands"*.

¹³ Pacific Regional Agricultural Programme is involved in promoting new caasava varieties to improve household food security and income following the TLB outbreak.

5.3.1.3 Increased Livestock Production

The number of cattle and domestic animals (largely pigs and chickens) has been increased for consumption and sale. In the 1993, few people raised cattle but most concentrated on pigs and chickens for social obligation and consumption. Now, of 73 households in the village, 43 raise cattle extensively by tethering and two progressive farmers have cattle farms.

Unasa is a progressive farmer and group leader during the FSP who has 7 cattle (4 heifers, 2 steer and bull) grazing under 3 ha land. All were purchased from MAFFM at \$600/beast with a DBWS group loan. He doesn't raise any pigs because of his religion. Nifo is a woman (treasurer of farmer group) who has leased 4 ha of village land for her cattle farm.

Table 3: Farm Characteristics - farm holdings, farm size, farm types (crops/livestock) and arable land

Farm er's Name	Farm Holdings	Farm Size before TLB (ha)	Farm Size after TLB (ha)	Crops (type)	Livestock (number)	Unused Arable land(ha)
Unasa	3	2 - 4 mixed crop	2 mixed crop, 5 coconut	tN, tmu, co, ban, vege, tp, ym, gin, pn, chi, cn, cas,	7 cattle, 23 chicken	1
Nifo	2	3 - 6 mixed crop	3 mixed crop, 4 coconut	tN, tp, tmu, co, cn, ban, vege, cn, cas, pand, pn, gin,	10 cattle, 25 chicken	0.5
Afoa	3	2.5 - 4 mixed crop	1.5 mixed crop, 2 coconut	tN, tp, tmu, co, cn, ban, vege, cas, pand, gin, pn	11 pigs, 16 chicken	2.5
Veve	2	3 - 4 mixed crop	1.5 mixed crop, 2 coconut	tN, tp, tmu, co, cn, ban, cas, pand, gin, pn,	2 cattle, 21 pigs, 34 chicken	0.5
Ivoga	2	2.5 - 4 mixed crop	1.5 mixed crop, 3 coconut	vege, pand, gin, pn,	18 pigs, 26 chicken	3

tN= taro Niue, tp = taro palagi, tmu = taamu, ban = banana, ym = yams, cas = cassava, gin = ginger, vege = vegetable, ka = kava, pand = pandanus, bf = breadfruit, cn = coconut, co = cocoa, chi = chillies.

5.3.1.4 Community Development

Siufaga was severely affected by the cyclones with roads, housing, electricity and water supply all damaged. About 70% of houses have been upgraded by farm income since the PRA exercise in 1993 which makes the village attractive to tourists. There was one vehicle in the village at the end of 1993, now there are 11 (secondhand) pick-ups, including at least one taxi. Out of 11 pick-ups 5 are owned by Unasa's farmer group and have been purchased from taro income. Taro was exported to the American Samoa market over the last 3 years (Appendix 3). Most children attend the high school (Tuasivi College in the next village) and primary school. Children's education is affordable *"We can afford school fees, medical expenses and better food"*. Many households can afford the luxury goods from the village store and consume nutritious food.

5.3.1.5 Revival of Traditional, Cultural and Religious Values

Introduction of the FSD approach has educated the villagers to preserve their indigenous forests and cultural trees (coconut, mosooi, pandanus). Such trees are valuable resources which have tangible and intangible benefits for the individual farmer and society. Multiple uses include food security, firewood, housing, handicrafts, timber, weaving, fishing, and ceremonial occasions. These trees have medicinal values which may save rural lives and are used for land boundaries to avoid land disputes. Coconut husks and shells are used for household cooking and for heating water as a substitute to expensive kerosene. Tourism industry is directly beneficial in terms of the resulting landscape and scenery as trees are deliberately and systematically planted throughout the village. Industries that involve women have benefited from tourists through sales of home made handicrafts.

5.3.1.6 Higher Household Income

Households derive their incomes from various sources. Before the PRA exercise in 1993, the major income sources, apart from the sale of farm produce, were wages, sales of fish and remittances. Now, about 90% of household income is derived from farm sales, especially taro and vegetables to meet their social obligations, church and education.

Ivoga earns \$40/week from her vegetable garden for family food. Many save their money in the bank, for example, Nifo and her husband have a joint bank account of \$6500.

The FSP changed Unasa's major income source by the introduction of an increased number of new crops (root crops, vegetables). This increased the family's total income and saved more time for community activities "The MAFFM's officials during the PRA exercise told us to diversify our farm production".

Before the FSP, Unasa used to grow cocoa and banana under coconuts after cyclones and TLB in 1993. We relied on remittances from New Zealand and American Samoa. Rice became a staple food but FSP has pushed us to grow new crops. Now we still plant taro Niue and new short term crops, we know how to control TLB disease. We earn \$50 from vegetable and \$150 from taro a week respectively. His annual farm income has been increased compared to others (Table 4).

Table 4 Household Income, Household and Farm Expenditure

Name	Annual Farm Income	Non-farm income	Household Expenditures	Farm Costs Equip/Input	Transport Costs
Unasa	\$3845 from taro, taamu	\$450 remittances, \$50 road maintenance	Yearly: \$250 sch.fees, \$100 medical, \$200 clothes, Weekly: \$50 faalave, \$50 church, \$100 food	\$60 herb, \$50 TLB, \$320 k/sprayer, \$25 b/knives, \$45 crowbar, \$10 p/stick	own transport, \$5 fuel a trip
Nifo	\$4560 from taro, taamu	\$500/fort. wages, \$50 road maintenance	Yearly: \$350 sch.fees, \$180 medical, \$250 clothes, Weekly: \$100 faalave, \$50 church, \$150 food	\$1050 m/blower, \$320 k/sprayer, \$45 b/knives, \$850 chainsaw	own transport, \$5 fuel a trip
Afoa	\$685 from taamu, banana	\$30 road maintenance	Yearly: \$120 sch.fees, \$80 medical, \$90 clothes, Weekly: \$30 faalave, \$40 church, \$30 food	Old k/sprayer, \$12 bush knife	public bus, \$10 bus fare, \$3 basket/trip
Veve	\$1500 from taro, cocoa, taamu	\$500/fort. wages, \$50 road maintenance	Yearly: \$200 sch.fees, \$130 medical, \$280 clothes, Weekly: \$50 faalave, \$50 church, \$80 food	Old k/sprayer, \$12 bush knife	own transport, \$5 fuel a trip
Ivoga	\$600 from vegetable	\$30 road maintenance	Yearly: \$160 sch.fees, \$50 medical, \$200 clothes, Weekly: \$40 food, \$30 faalave, \$20 church	\$35 rake, \$40 seeds, \$26 l litre weedicide	hired transport, \$10 trip

5.3.1.7 Farmers' Self-Reliance and Education

Formal training in agriculture is rarely undertaken and any informal training is provided by MAFFM. Farmers through informal training have already adopted the concept of agricultural commercialisation and crop diversification technology. Unasa was sent overseas to observe the TLB control. Others attended the informal training conducted by MAFFM although most of them finished schooling at village and district level (Appendix 3, Table 2). As a consequence, they still grow taro for domestic and overseas markets despite the TLB.

During the 2 hour meeting with 2 existing groups undertaken by the researcher, leaders were asked to give an account of events related to agricultural development since the TLB in mid 1993 and when the PRA was done in that year. One leader stated that village farmers have learnt from MAFFM over the period especially as to the control TLB. *"We know how to control TLB and time of the year to grow taro"*. During the transverse exercise with EO and farmers it was said that *"the village is now self reliant, they are no longer asked for handouts and that farmer training, especially in relation to TLB, has paid off and grows more taro than any village in Savaii"*.

5.3.1.8 Women and Agricultural Activities

Before the FSP, women concentrated upon household activities, weaving and fishing as major income source but the crop diversification technology (gardening) increases

women's productivity and participation in farming business. Women's productive workload increases as they join the farmer groups. Women become full time farmers by spending half of men's time on gardening. Ivoga used to sell fish and finemats but now she spends 4 hours a day on vegetable garden with her husband (Table 5). Her vegetable garden has generated quick income of \$40/week for family food.

More employment opportunities are available for women and children. Women without young children are working full time on farms while their husbands are engaging in off-farm employment. *"Men's roles are performed by women. Husband works in the office, wife manages the farm, prepares family food"*. Women derive more income from vegetables and other crops.

Table 5 Time Spent on Farm, Labour Sources, Occupation, Decision makers

Name	No. of Hours worked /day	Labour Sources *	Husband/wife occupation	Decision Makers #
Unasa (M)	8	Unasa & wife (FT), children (PT)	wife, gardener	Joint decision
Nifo (F)	8	Nifo & sons (FT), husband (PT)	husband, police	Nifo, dominant decision maker
Afoa (M)	6	Afoa & wife (FT), children (PT)	wife, gardener, seller	Joint decision
Veve (F)	6	Veve & wife (FT), children (PT)	wife, farmer	Joint decision
Ivoga (F)	4	Husband (FT), Ivoga & children (PT)	husband, farmer	Joint decision

* Mostly Involved

Decision makers

M = male, F = female, FT = full time, Joint decision = husband & wife, PT = part time

Nifo works full time with her three sons on farm. Her husband and one son work in the Police Department, earn \$500 fortnightly. Hired labour is sometimes employed for land clearing at \$15/manday plus 3 meals. This woman carries domestic duties and farming. She is a dominant decision marker, husband and children are advisers (Table 5)

5.3.2 Identification of Factors Influencing the Adoption of Innovation

5.3.2.1 Land Shortage and Ownership

Land shortages have encouraged farmers to cut down coconut trees which are a multi-purpose crop. Customary land is a controversial issue and everybody has rights to land, particularly the village fono. Land ownership has discouraged progressive farmers from adopting the commercialisation and crop diversification technology. *"We cannot lease lands from our neighbouring villages or even within the village"*.

Veve has decided to establish a cattle farm but land holdings are scattered and small (Table 3). He has 1.5 ha of land cultivated under the coconut and arable land. Leasing of village lands is quite difficult and time consuming. Nifo has leased 2 ha of

family land but she commented that it took 6 months to seek the extended family consensus.

5.3.2.2 Socio-economic and Development Level

Land shortages encourage the purchasing of farm inputs (fertilisers, chemicals) to increase the land productivity as a result of deteriorating soil fertility. Farm inputs from ASC are however unaffordable to many farmers. Farmers were asked what would happen if the government closed the ASC and allowed other companies to sell inputs. The response was that farm inputs would not be affordable (Table 6). *"We can't afford the fertiliser(\$22/bag), its ridiculous to close the ASC. This money is saved for children's school fees, faalavelave, church donations"*. This has been demonstrated by 70% of households growing the taro Niue for consumption only.

Afoa is a semi-subsistence farmer who can only afford the bush knife and grows crops for family use. However, progressive farmers (Unasa, Nifo) who possess accumulated farm inputs, suggested allowing free market competition which reduces farm input prices. "ASC must be closed 'cos we need some changes". This is demonstrated by growing taro Niue on commercial basis despite the TLB and by investing on a cattle farm.

Table 6 Major Constraints, Prioritised Farming Activities and Peoples' Needs

Farmer's Name	Types of Constraints	Prioritised Farm Activities and Needs
Unasa	No fertile land, thefts, shortage of planting materials, lack of extension advice, no water for spraying, lack of markets, social obligation	taro Niue, taro Fili, cocoa, vegetable, ginger, chillies, coconut; cattle farm; establish village nursery; extend water supply, new markets, reliable extension service
Nifo	No fertile land, shortage of planting materials, lack of extension advice, social obligation, lack of markets, no water supply	taro Niue, taro Fili, kava, cocoa, cattle farm, taamu, banana, peanut, chillies, ginger, vegetable; cattle farm; extend water supply; village nursery; recruit more female EOs
Afoa	lack of capital, shortage of planting materials, lack of markets, social obligation, lack of extension advice, crop pests/diseases, short access road	taro Niue, taro Fili, coconut, cocoa and vegetable, cattle farm, promote mass media, regular farm visits, new markets, EO be transferred, on-farm demonstration
Veve	lack of capital, shortage of planting materials, no fertile land, lack of extension advice, access to credit	cocoa, kava, vegetable, taro Fili; cattle farm, promote mass media (TV, phone); replace the EO, remove extension house, new market
Ivoga	No time, no markets for ginger, peanut, chillies, lack of advice, no loan security	vegetables, cocoa, taamu and livestock; channel extension programmes through CBOs instead of farmer groups.

5.3.2.3 Market Availability and Characteristics

The concepts of agricultural commercialisation and adoption of crop diversification technology have been questionable due to lack of market opportunities for short term crops. This is demonstrated by growing ginger, peanut and chillies on a minor scale. Farmers criticise the MAFFM and government officials for not searching new

markets. *"These crops generate more profits but now there is no market so just produce them for stomach"*. If there was a fixed market for these crops then there would be more interest in them. It is seen that there is a high demand for short term crops to best match the demand of faalavelave, church and daily expenses. Returns from longer term crops are discounted heavily. Progressive farmers have the financial capabilities to diversify to other farm enterprises. Unasa and Nifo operate cattle farms funded by farmer group loans in response to high market prices for beef.

5.3.2.4 Community Participation

The extension service is regarded by villagers as a fundamental tool to communicate with government. Complaints are mounted about no contact with the EO that result in short-lived farmer groups and the efficiency of extension programmes is questionable. Five farmer groups were established in 1993 by the PRA team, two of which still exist but have decreased in size from 20 to 10 members. Three farmer groups have collapsed due to infrequent EO's visits after the Bonus Scheme and no free gifts (planting materials and inputs from the FSP). Hence, community participation is still questionable. Village CBOs (youth clubs, women's committee) show no indication of participating in extension programmes. Ivoga is the president of the village women's committee and is the Pulenuu's wife. *"We never involve in MAFFM or MWA's programmes"*. Women still concentrate on weaving as income source. *"Any programme must be channelled through village fono (matai) to advise their wives. Once women are convinced, they will participate and benefit community"*. Women whose husbands are group members participate and benefit from the programme. Nifo is a member of Komiti Vafealoai¹⁴ of SDA church which was established in January 1996 to monitor farm developments. *"We conduct monthly farm inspections and organise other activities"*.

During the Independence Day holidays, this women's committee held the agricultural show, they made five floats representing taro, banana, ufi, taamu and livestock. It was sponsored by SDA church to promote Siufaga as a progressive agricultural village, with a plan to expand this year (1997) and include other villages. Shortage of planting materials for cocoa, coconuts and kava has left others' lands uncultivated and resulted in lower agricultural production. Afoa is a non-group member but he has requested planting materials to utilise his land. Villagers have also decided to establish a village nursery.

¹⁴ Komiti Vafealoai, women's group which is responsible for agricultural, women, health and church activities

5.3.2.5 Availability of Adequate Resources and EO's Accountability

The extension service has been perceived as being a waste of government resources. Farmers have direct access to the main office when requiring some assistance. The EO has been accused of dishonesty in performing her job. She never lives in the extension station. *"Station remains vacant, its not useful, she lives with her husband in one district and never visits us. We don't know what she is doing. She feels shy to deal with us 'cos she is from our village. Replace her with EO from different village. Remove house and casual worker 'cos waste of government money on lease"*. However, the EO pointed out that she has no transport and living allowance. It was observed that the house's condition was bad, it is unfurnished, has no electricity or water supply. *"Furniture has been stolen by the former EO and casual worker"*.

5.3.3 Summary

Since the Siufaga village involvement in the AusAID FSP, there has been significant changes in socio-economic development of the village. The great impact of FSD approach is reflected in higher adoption of agricultural commercialisation and crop diversification technology that contributes to increased agricultural production; domestic and overseas market sales; sustainable farming systems; higher community development in terms of housing, personal assets, household income to meet demand of social collective system; affordable children education; better village health and higher consumption of nutritious food.

Implementation of the PRA exercise has educated village people on appropriate ways of preserving their indigenous resources - forest and cultural trees that are valuable to traditional, cultural and religious ceremonies but also contribute to tourism industry in terms of land-scape and scenery as well as women micro-enterprises. The exposure of farmers to informal training, group discussions, meeting and development of on-farm research and demonstration plots has improved their self-reliance and self-motivation. This has been demonstrated by growing taro commercially, despite the TLB, as well as other new marketable crops. Women in farmer groups perform their productive and community roles on household farms, participate in decision making, carry out community work as well as performing their domestic duties. However, the adoption of modern technology, except for progressive farmers, is limited due to land shortage and ownership; socio-economic status of people; lack of access to supporting services

(credit, input, planting materials); and limited market opportunities. In addition, the village development is considerably unsustainable due to limited participation of other CBOs (women's committee, youth clubs, informal groups) in extension programmes as a result of ineffective extension services after the bonus scheme and no free gifts from the FSP, lack of EO's accountability, inadequate resources and incentives due to insufficient government funding. This has contributed to the short-lived farmer groups, social inequity and inequitable redistribution of income among the village communities. As a matter of fact, only those who are directly involved in farmer groups benefit, rather than the whole of the community.

5.4.1 Samalaeulu Village: Case Study 2

Samalaeulu village is located in the Northern coast of Savaii Island, about 85 km from Salelologa wharf (Appendix 4). It had a population of 656 (354 male : 302 female) in the 1991 census but now has less than 500 people (Appendix 3 Table 1). The village has a primary school and women's committee house where the public telephone booth is placed. Facilities include two trade stores and five water tanks, as the piped water supply is inadequate. Public transport is accessible but access to further inland is limited. About 70% of the houses are European style, water supply is piped and electricity was first available in 1995 under the government rural electrification and rehabilitation work. The village has 58 households, each own a radio, stereo and TV set (Appendix 3, Table 3). There are 2 churches (Catholic and Mormon), each has a youth club. Over the last 10 years, the village was involved in MAFFM's extension programmes (T & V system, Bonus Scheme) and in April 1997, two farmer groups had been established by the EO using the modified PLA technique despite the land dispute between village matais and the local Catholic minister.

5.4.1.1 Agricultural Production and Food Security

Samalaeulu is a village where agriculture is the main activity with taro being the main source of cash and the staple food. Cyclone damage has resulted in lower production of other cash crops, cocoa and coconut, and the TLB had major adverse impact on the economic status of villagers. During farm visits it was observed that there were new cocoa planting from the Bonus Scheme that are scattered under the coconut trees. Few farmers continue with crop maintenance but most neglect their cocoa trees. Traditional crops are grown but there are requests for planting materials of new crops

such as ginger, peanut and kava. Taro Fili is not grown but demand for planting materials is high. Average farm size is 1 ha which is small compared to previous years before the TLB (Table 7). Livestock production (pigs, chickens) has been increased for family consumption but cattle production is low. Ioane is a farmer group leader raising 10 cattle purchased from relatives but not from MAFFM's Livestock Development programme (Appendix 3). Food security is low and rice has become a weekly staple food because of its affordable price. Banana and taamu are purchased from Salelologa Market for Sunday toonai¹⁵.

Table 7 Farm Characteristics - farm holdings, farm size, farm types (crops/livestock) and arable land

Farmer's Name	Farm Holdings	Farm Size before TLB (ha)	Farm Size after TLB (ha)	Crops (type)	Livestock (number)	Unused Arable land (ha)
Ioane	4	3- 8 mixed crop	1.5 mixed crop, 12 coconut	tp, tmu, vege, ban, cn, pand	10 cattle, 26 pigs, 43 chicken	40
Leapaga	4	2 - 3 mixed crop	1 mixed crop, 20 coconut	tN, tp, tmu, ban, co, cn, pand	22 pigs, 42 chicken	48
Lusila	3	2- 4 mixed crop	1 mixed crop, 12 coconut	tN, tp, tmu, ban, vege, ym, cn, co	8 pigs, 13 chicken	32

tN = taro Niue, tp = taro palagi, tmu = taamu, ban = banana, ym = yams, cas = cassava, gin = ginger, vege = vegetable, ka = kava, pand = pandanus, bf = breadfruit, cn = coconut, co = cocoa, chi = chillies

5.4.1.2 Soil Conservation and Cost- Effective Farming Systems

Crop diversification has sustained the traditional (agroforestry) farming system and soil fertility with a rotational fallow regardless of the smaller farm size (Table 7). Traditional short term crops are intercropped with perennial crops which reduce the production costs and generate considerable income. Some land has recently been cleared for kava, taamu and taro palagi. Cattle are grazing under coconuts and enough land is available for other agricultural enterprises (Appendix 3).

5.4.1.3 Community Development

Few new village developments have been identified and 90% of new house construction has been funded by remittances. Few Samoan houses still exist. Churches and school buildings have been renovated by remittance and loans but such development has aggravated the urban migration of rural labour force, especially men. School enrolment is high with fees funded by remittances and wages except farmer group members who are able to pay fees out of income.

Ioane is a progressive farmer whose new brick house and secondhand pick-up are funded by farm income. He spends \$200 on school fees and \$100 on medical expenses

¹⁵ Toonai is a family food on Sunday normally cooked in Samoan oven.

a year (Table 8). It was reported that the new Catholic Church was partially (50%) funded by taro income. The Priest is a youth club's patron that has 24 cattle purchased from MAFFM's Livestock Development programme by group loan from DBWS. Church members are employed as farm managers.

The Village Development Committee, chaired by the Puluenuu is working with group members to coordinate village monthly training, meetings, farm inspections, water supply, and access road maintenance work despite mounted criticisms. *"Access road is in good condition but not reaching other farms. Scheme must be abolished and bring back PWD machines"*. The people have requested training on vegetable production and composting technology.

Table 8 Household Income, Household and Farm Expenditure

Name	Annual Farm Income (WSS)	Non-farm Income	Household Expenditures	Farm Equip-Input Costs	Transport Costs
Ioane	\$2600 from taro palagi, taamu	\$50 from road maintenance	Yearly: \$200 school fees, \$100 medical, \$250 clothes, Weekly: \$50 church, \$50 faalave, \$60 food	\$25, 2 bush knives, \$40 axe, \$26 weed.	own transport, \$10 fuel
Leapaga	\$850 from coconut	\$50 from road maintenance	Yearly: \$100 medical, \$200 clothes, Weekly: \$40 church, \$50 faalave, \$30 food	\$20 2 bush knives, \$35 axe	public bus, \$10 bus fare
Lusila	\$1000 from vegetable	\$30 from road maintenance	Yearly: \$100 school fees, \$600 loan, \$50 clothes, Weekly: \$20 church, \$40 faalave, \$20 food	\$12 bush knife, \$25 vegetable seeds	public bus, \$8 bus fare, \$10 produce

5.4.1.4 Alternative Sources of Income

Before the formation of farmer groups, remittances and coconut husking were the major income sources. The crop diversification technology has educated people about financially viable and sustainable farming systems. Taro palagi, taamu and vegetables are new income sources and sources of food security. The Farmer Group approach and Crop Diversification technology increased the family income and they also gained time for other activities. *"We were told by EO to sustain the intercropping system because of its cost-effectiveness and quick money compared to coconut husking"*.

Before the PLA exercise, Ioane had a copra drier and employed 3-4 labourers at \$12/day plus 3 meals for coconut husking. The whole process yields an income of \$300 a month. His wife had no time for household duties and community activities. Now, he sells taro palagi and taamu to the Salelologa Market at \$10-15/basket and \$15-20 each respectively, earns \$500 a week. He sometimes sells a steer at \$2000/beast when crop production is low.

5.4.1.5 Community Involvement

The formation of farmer groups has gradually brought the disorganised community together. Two farmer group members perceive that they are working together as a team. This is unusual for a village confronting the land dispute. *“Village fono is split because of land dispute, but this programme bring us together”*. Other matais, young men (taulelea) and women have formed up two groups of 12 members (25% are women) with a plan to establish another 4 groups (Appendix 3).

During the 4 hour meeting with 2 farmer groups, it was revealed to the researcher that the number of members had increased from 6 to 10 members. During the transverse exercise in the company of field EO and 2 farmers it was mentioned that people are desperate to participate in extension activities and they asked for written materials relating to TLB control. Group discussions with the EO are held every fortnight and monthly farm inspections are undertaken by group members. During the 2 hour meeting held by the researcher with the women’s committee it was found that the women decided to establish their own vegetable garden as alternative sources of funds. Each woman had established her own family plot. Schools and church youth clubs have decided to follow in the same footsteps. They have all requested a village nursery.

Table 9 Time Spent on farm, Labour Sources, Occupation, Decision makers

Farmer’s Name	No. of Hours Worked/day	Labour Sources *	Husband/wife occupation	Decision makers #
Ioane (M)	6	Himself & sons (FT), wife (PT)	wife, weaving, cooking	Joint decision
Leapaga (M)	6	Himself & sons (FT), wife (PT)	wife, weaving	Leapaga, dominant decision maker
Lusila (F)	4	Herself & Husband (FT)	husband, farmer	Joint decision

M = male, F = female, FT = full time, PT = part time, joint decision = wife & husband

5.4.1.6 Status of Women

Generally women do not have freedom to express their opinions during the village fono because of the traditional culture and customs. *“High ranking males dominate the village meeting decision and the lower level villagers including women pay respect. Women respect whatever decisions made by village fono which consists of only men”*. Now, after the group formation, women can perform leadership role and share the decision making but general consensus is that men are household heads. *“We have rights to speak freely at meetings and share household decisions”*. Women still play a “subordinate” role in most cases, although their practical needs (vegetable gardening, cooking, handicrafts, village clean-ups) are met. However, women have confidence and belief in the future.

Lusila has 4 school aged children who work part time on her (1/4 acre) vegetable garden (Table 9) and help nurture her baby. She earns \$40 a week from her road stall for loan repayment and food. She participates in group discussions and training with her husband.

5.4.2 Identification of Factors Influencing the Technology Adoption

5.4.2.1 Land Dispute and Ownership

A land dispute between the Catholic minister and village fono has led to the deterioration of the communities participation and involvement in MAFFM's extension programmes. As a consequence, the village is split, the EO has no power and even the Pulenuu (government representative) is unable to get the villagers to cooperate. The catholic priest is a powerful and influential person in the village which has resulted in the cancellation of village fono and women's committee meeting.

Before the land dispute, village fono is conducted monthly at which the EO delivers his extension programme. Now, catholic followers are not allowed to participate in village activities until this problem is resolved. As a result, community participation in extension programmes is questionable except for two farmer groups members

5.4.2.2 Samoan Way of Life "Collective System"

People living in rural societies have many social commitments even though they are poor and vulnerable. Farm income is spent on social obligations and church. *"If no contributions are made, heavy penalty can be awarded by village fono"*.

Leapaga is a subsistence farmer who has 12 children (10 boys, 2 girls). None of them attend the school any more, school fees are unaffordable. A bush knife is the only farm asset and cannot be used as collateral although enough land is available. Each week, he spends \$50 on faalavelave, \$40 on church donations and \$30 on food. No remittances have been received and he earns only \$50 from his work on road maintenance. Cattle farming is a priority but he has no savings to purchase fencing materials and animals. Lusila is living in a very Samoan thatched house "faleoo" with her 5 children. Each week, she spends \$40 on faalavelave, \$20 on church and \$20 on food (Table 8). She has no savings for her vegetable garden expansion or for new clothes for her children.

5.4.2.3 Market Characteristics and Socio-economic Development Level

Not all rural households are able to gain access to better market outlets due to their socio-economic status and market characteristics. People with more farm assets, adopt the new technology earlier to increase farm production and income. Others produce for consumption and partly for sale. Ioane has possessed enough assets to expand his

farm and generate more income (Appendix 3). Lusila and Leapaga can only afford a bush knife to increase farm production for village sale. *“Knapsack sprayer costs \$245 which is too expensive. Money are used for our family food and school fees”*.

Table 10 Major Constraints, Prioritised Farming Activities and Peoples' Needs

Name	Types of Constraints	Prioritised Farm Activities and Needs
Ioane	lack of capital (loan security), lack of farm inputs, shortage of planting materials, social obligation	taamu, taro palagi, vegetable, taro Fili, cocoa, coconut, kava, loan for cattle farm, village nursery; organise a training on vege. production, ccmposting,
Leapaga	lack of capital (loan security), shortage of planting materials, lack of inputs, social obligation, no contact with EO, high transport costs	cocoa, coconut, kava, taro Fili; cattle farm; develop rural markets, input suppliers and banks; conduct the PRA exercise, reliable extension service, loan.
Lusila	lack of capital (loan security), lack of planting materials, lack of inputs, no contact with EO, high transport costs	vegetable, taamu, cocoa, pandanus, cattle farm, taro Fili, develop rural markets, loan

5.4.2.4 Transport and Marketing

Farmers with farm vehicles, typical of progressive farmers, can afford to increase farm production, gain access to better urban markets to generate sufficient income. There are concerns that transportation costs are too high despite new tarsealed roads. Difficulty of access to government services (input suppliers, markets and banks) has lessened the adoption of technology and farmer participation in extension programmes.

Ioane is able to purchase farm inputs from the ASC and sells his produce at Salelologa Market every Saturday. Lusila has a road food stall to sell her vegetable and drinking nuts. Transportation costs are unaffordable. “I spend \$8 for bus fare plus \$10/bag of produce, its not worthwhile”. She never uses fertilisers because it is too expensive which has resulted in lower crop yields and reduced income. Leapaga sells coconut to the middlemen’s truck travelling around the island (Table 10).

5.4.2.5 Community Participation and EO’s Accountability

There are concerns that only group members benefit from extension programmes. Villagers indicated that the MAFFM’s extension programmes focus predominantly on farmer group members excluding other members of the village community. This is demonstrated by more women growing pandanus for weaving as a source of income and for social collective system. More lands remain uncultivated because the people have no understanding about other types of farm enterprises to be undertaken following the natural disasters. The women’s committee commented that *“He rides on his motorbike along the road and never visits us. He normally talks to Ioane and his groups but he must attend our meeting with health officials to discuss our needs”*. Leapaga said that *“we never meet the EO since the last 4 years. we think the last*

programme (T & V system) is better 'cos he visits us every week based on his plan''. Such programmes could improve the family and village health status. However, group members contended that the extension service is useful in terms of farm improvements and income. *"EO is honest and visits us every week. He conducts on-farm demonstrations, inspections, and attends group meetings".*

5.4.3 Summary

Agricultural development has been declining as a consequence of low adoption of crop diversification technology and negative impact of the Bonus Scheme. The land dispute has also contributed to the production decline. Food supply is scarce but fortunately the price for a new staple food, rice, is affordable. Farm produce is used for consumption except for farmer group members. There is an over-reliance on remittance and loans for community development activities and low agricultural development has accelerated urban migration of agricultural labour force. Children's education and social collective system are funded by remittances. However, the formation of farmer groups has stimulated community involvement and there are requests for the formation of another four groups. Group members have requested written materials relating to vegetable growing. Villagers need the EO's assistance for the establishment of the village nursery to avoid the planting material shortage. Farmer group members are self-educated in the field of marketing and access to alternative income sources. Status of women is enhanced by higher farmer group participation and by involvement in decision making but limited by their reproductive roles.

Unfortunately, the adoption of modern technology is limited due to land ownership which contributes to the variable community participation. The Samoan Collective system discourages personal savings for farm developments which aggravates the rural poverty and social inequity. Higher transportation cost has limited rural farmers' access to supporting services and the adoption of crop diversification technology except high socio-economic status farmers. Community participation is still poor as a result of ineffective extension approach (PLA techniques). In fact, the field extension officer could not resolve the complexity and diversity of farmers' needs and problems. Thus only farmer group members are directly involved in extension and benefit most.

5.5.1 Malaemalu Village: Case Study 3

Malaemalu is located in the Southern side of Upolu Island, about 120 km from Apia town (Appendix 4). Public transport is accessible and a few people own vehicles but access further inland is limited. It had a population of 416 (206 male: 210 female) in the 1991 census which has now decreased by 25% as result of urban and overseas migration after the natural disasters of the early 1990s. Approximately 70% of households are headed by men (Appendix 3, Table 1). The village has 2 trade stores and 2 churches (Congregational and Methodist) and each has youth club. About 80% of houses are European style, water supply is piped and electricity is available. The village consists of various CBOs, namely village council (matai), young men (aumaga), women's committee and youth clubs.

Over the last six years the village was involved in MAFFM's programmes which included the T & V system, Bonus Scheme and in April 1997, the Methodist Youth Club, the first CBO was involved in MAFFM's extension programmes using the PLA techniques. However, this new extension technique has created more tensions with rural communities as a result of the exclusion of other village CBOs and wrong channels of communication used by the EO.

5.5.1.1 Lower Agricultural Development

Malemalu village is located in an area suitable for taro with good soil fertility and suitable rainfall. Before the TLB, taro was grown as commercial crop along with coconuts. Each household had 2 - 6 ha of taro plantation intercropped with short term crops. One farmer commented that "*taro is our money crop for faalavelave*". Other crops like coconut were grown for consumption and animal feeds. Now taro is gone, very few households still grow taro for family use. There is a low level of agricultural activity with about 70% of village land remaining in fallow including the areas under coconut, much of which has turned to secondary bush. People who can afford pig wire grow a few crops while wooden and stone fences have become popular. Average farm size is 0.5-1 ha which is small compared to the years before the TLB and cyclones (Table 11).

5.5.1.2 Sustainable Traditional Farming System

The concept of crop diversification has not yet been adopted but a range of crops are grown as part of the traditional farming systems. Different varieties of banana (misiluki, paka, fai samoa), taamu, cassava, yams are intercropped for consumption only. New crops (ginger, peanuts, kava and vegetable) are unavailable except for a few that are grown by the Methodist Youth Club on a demonstration plot. Compost technology is conceived as being economical and an environmentally sustainable method of increasing vegetable production “compost is a cheaper substitute for expensive fertilizers from the ASC”.

Moli is a progressive farmer who has diversified to commercial banana “fai palagi” and a cattle farming enterprise. Crops are grown with a leguminous trees to reduce the fertiliser application while timber trees are planted as boundary marks and windbreaks. Cattle are grazing under coconut to ease the nut collection. Moli learnt the crop diversification technology from other progressive farmers and attending farmer training and seminars at Nuu Research Station.

Table 11 Farm Characteristics- farm holdings, farm size, farm types (crops/livestock) and arable land

Farmer's Name	Farm Holdings	Farm Size before TLB (ha)	Farm Size after TLB (ha)	Crops (type)	Livestock (number)	Unused Arable land (ha)
Ulima	3	2 - 3 mixed crop	0.5 mixed crop, 10 coconut	tmu, cn, ban, cas, pand	3 cattle, 24 pigs,	12
Soe	4	2 - 4 mixed crop	0.5 mixed crop, 14 coconut	ban, tp, cn, pand, cas	2 cattle, 18 pigs, 30 chicken	16
Moli	3	4 - 8 mixed crop	4 mixed crop, 20 coconut	ban, tp, tmu, cn, co, pand, cas,	8 cattle, 27 pigs, 30 chicken	10

tp = taro palagi, tmu = taamu, ban = banana, ym = yams, cas = cassava, gin = ginger, vege = vegetable, ka = kava, pand = pandanus, bf = breadfruit, cn = coconut, co = cocoa, chi = chillies

5.5.1.3 Community Development

No village developments were identified and new and renovated houses were solely funded by remittances. The school building was renovated by New Zealand Relief Assistance. The Congregational Church’s renovation work was funded by remittance and contributions by the villagers. Coconut selling, fishing and remittance are still the major income sources and 90% of household income is derived from remittance and wages. Rice is a staple food due to its affordable price and this discourages land cultivation.

Table 12 Household Income, Household and Farm Expenditure

Name	Annual farm Income (WSS)	Non-farm Income	Household Expenditures	Farm Equip- Input Costs	Transport Costs
Ulima	\$400 from coconut	\$250 remittances a fortnight, \$40 fishing, \$60 road maint.	Yearly: \$150 sch.fees, \$100 clothes, Weekly: \$20 church, \$20 faalave, \$10 food	\$12 bush knife	public bus, no market, sale to middlemen
Soe	\$500 from coconut	\$150/fort. wages, \$50 fishing, \$50 road maint.	Yearly: \$120 sch.fees, \$150 clothes, Weekly: \$40 church, \$50 faalave, \$30 medical, \$40 food	\$12 bush knife	public bus, no market, sale to middlemen
Moli	\$12,000 from copra, banana, livestock	\$400/fort.wages, \$1500/wk store, \$800 remittances a year	Yearly: \$200 sch. fees, \$300 clothes, \$1200 loan, Weekly: \$50 church, \$50 faalave, \$200 medical, \$150 food	\$1250 m/blower, \$700, 2 k/sprayer, \$950 chainsaw, \$1000 chemical.	own transport, \$20 fuel a trip to market

Ulima is a small farmer and president of Methodist's Youth Club who lives in a wooden iron, roofed house. His wife is a women's committee member and is engaged in household activities, weaving and cooking (Table 13). A 0.5 ha farm and livestock animals are operated to meet home consumption. Ulima's four children's education is paid with the \$250/fortnight from relatives in New Zealand. Coconut selling and local fish sales earn \$50/week for family needs and village faalavelave (Table 12).

5.5.1.4 Employment Opportunities, Revival of Christian Faith and Cultural Values

Establishment of a vegetable demonstration plot in April 1997 has been perceived as a way of creating new employment opportunities for youths, especially school leavers. Every Thursday, village youths spend half a day on the vegetable plot weeding, spraying and watering. *"We know how to manage it"*. The youths have decided to expand the vegetable garden and eventually want to establish their own home gardens. The success of Taro Fili has encouraged them to recultivate the fallow lands.

Ulima has more than 10 ha of cultivated land under coconut trees. "Taro Fili motivates us to clear lands rather than do nothing". Compost technology is believed by the farmers to be cost-effective and ecologically sustainable.

The MAFFM's extension programme is regarded as an important tool to encourage youths and bring about a revival of Christian faith and cultural values. The vegetable plot attracts young men and women particularly the Sunday School children who participate in field work and bible studies. Children are involved in watering and weeding. *"Decision making is shared through interaction"*. Income is used to purchase uniforms for church and cultural activities.

Table 13 Time Spent on Farm, Labour Sources, Occupation, Decision makers

Name	No. Of Hours Worked/day	Labour Sources *	Husband/wife occupation	Decision makers #
Ulima (M)	5	Ulima (FT)	wife, weaving, fishing	Dominant decision maker
Soe (F)	3	Soe (PT)	husband, farmer	Adviser
Moli (M)	6	Moli & sons (FT), wife (PT)	wife, retired teacher, shop keeper	Dominant decision maker

* Mostly Involved

Decision makers

F = female, M = male, FT = full time, PT = part time

5.5.2 Identification of Factors Influencing the Adoption of Technology

5.5.2.1 New Access Road Scheme

Policy makers believe that villages with better access roads show a higher level of agricultural development. Farmers have, however, criticised the government about its new access road scheme. There are concerns that monetary compensation of \$4000/road/six months for village access road is waste of money. The Malaemalu road is still impassable and not reaching the productive lands further inland (Table 14). *“Scheme is unsustainable, money is inequitably distributed and wasted on food and drinks.* The old system of using government machines is preferable. As a consequence, more productive lands are uncultivated and farms are scattered on unfertile lands.

5.5.2.2 Socio-economic and Development Level and Business Profile

Farmers with accumulated farm assets, typically of high economic status, operate commercial farm enterprises exhibiting a quick adoption of technology. Household income has been increased dramatically which results in increased social and economic welfare. Access to credit for farm operations is higher than for those without farm assets.

Table 14 Major Constraints, Prioritised Farming Activities and Peoples' Needs

Name	Types of Constraints	Prioritised Farm Activities and Needs
Ulima	lack of capital, shortage of planting materials, lack of inputs, TLB, roaming pigs, social obligation, higher transportation costs, poor access road, rocky soil	cattle farm, cocoa, vegetable, coconut, banana, taamu, yams, taro Fili, ginger, peanut; organise a training on vegetable production and composting.
Soe	lack of capital, shortage of planting materials, lack of farm inputs, crop pests/diseases (TLB), rocky soil, roam pigs, no contact with EO, transport costs	cattle farm, vegetable, traditional crops, livestock, pandanus, taro Fili, attend women meeting with nurse, promote mass media (TV, phone), stay in office
Moli	lack of planting materials, thefts, social obligation, no contact with EO	Cattle farm, coconut, cocoa, taro Fili, more markets, reliable extension service; abolish new access road scheme; extend water supply to farms, bring PWD machines.

Moli has accumulated sufficient farm assets and 2 school teachers and 1 hotelier have provided collateral. He has received a loan of \$10,000 from DBWS for his cattle and banana farm. He expects 7 cattle from the MAFFM and plans to expand the kava, coconut and cocoa production although there is a shortage of planting materials (Table 14). His produce is sold at the Apia market at higher prices than can be achieved at the local market. Soe is a vice president of women's committee that grows the pandanus for weaving. She has purchased a bush knife to manage the small plot. Fishing, coconut selling and wages are major income sources (Table 12).

5.5.2.3 Community Involvement and Efficiency of Extension Service

There are concerns that only a few people are involved in MAFFM's extension programme and the main beneficiary is the Methodist's Youth Club. Villagers asked *"Is extension for youths or whole community? EO normally visits the youth club but not us"*. Other CBOs are frustrated with the extension programmes. *"They must be channelled through village fono to ensure communities' cooperation. EO must attend village monthly meeting, listen to us and conduct training, seminars and demonstrations. He is a dishonest man which is a waste of government money. The house remains vacant, remove it 'cos we have our traditional meeting houses"*. The EO argued that *"condition of the house is bad"*. It was observed that the house was unfurnished and that his office was occupied by planting materials. There is no on-station demonstration plot due to the emphasis upon on-farm research associated with the FSD approach. The proposal to remove the house would benefit both government and community in terms of efficient utilisation of limited resources and self-reliance. Weekly radio and TV programme are conceived as being more effective than individual farm visits and each household has a TV set and radio (Appendix 3, Table 3).

5.5.2.4 Land Ownership and Access to Government Services

The adoption of crop diversification technology is constrained by the land tenure system. Customary lands cannot be used as collateral, assets are required for large loans and personal guarantees for small loans. Households with more assets and civil servants, are eligible for loans and farm expansion. *"Farm can't be improved if no money to purchase inputs"*. The DBWS branch's service at Siumu is ineffective and people have to travel to the main office in Apia to collect cheques. There are concerns that loan processing is time consuming and costly for the farmers.

Ownership of transport has a close correlation with types and objectives of farm enterprises. Farmers who own vehicles tend to show a higher level of farm developments and willingness to adopt new technology compared to those without vehicles. Moli grows banana “*fai palagi*”¹⁶ and dries copra selling to urban markets at higher prices. Although the road is tarsealed and public transport is accessible, market sale is still difficult. Village road stalls are preferable to urban market sale. Ulima and Soe produce nothing for the market, only coconuts sold to middlemen (Table 12). *“Its unprofitable to sell coconuts to urban markets, we have to pay \$10 for bus fare plus another \$5/bag. EO must bring farm inputs and we pay for them. Everything is expensive since the VAGST”*.

5.5.3 Summary

Agricultural development has been disappointing in terms of farm production since the natural disasters despite increased growing of other traditional crops for home consumption. Taro is completely out of market arena following the TLB outbreak. This fall has contributed to lower food security, household income and village developments. Housing developments are funded by remittances, while church and schools are financed by government assistance. Almost 100% of household income is derived from remittances, wages, fishing and coconut selling. Rice has become a new staple food which affects the agricultural development. However, the involvement of the Methodist Youth Club in the extension programme has introduced the crop diversification and compost technology to develop other new alternative income sources especially vegetables. Conceivably, the establishment of the vegetable demonstration plot creates new employment for youths; assists with the revival of Christian faith and cultural values and the enhancement of self-reliance and self-sufficiency through the participation in field work and bible studies.

Unfortunately, the technology adoption has been influenced by another government supporting scheme, the access road. The scheme has been perceived as waste of government money due to impassable road to productive agricultural lands. This has resulted in increased uncultivated land, lower crop yields and income. Community development is lower due to limited community participation in extension programme. As matter of fact, other village CBOs criticise the EO’s programmes of

¹⁶ Fai palagi, a high quality banana which can be exported to New Zealand market or sold at domestic markets at higher marketable prices.

only targeting youths. It is suggested that extension should be channelled through village fono and CBOs. Mass media could be an option. The land tenure system and higher transportation costs have contributed to low technology adoption, except for progressive farmers.

5.6.1 Taelefaga Village: Case Study 4

Taelefaga village is located in the Fagaloa Bay on the Northern coast of Upolu Island (Appendix 4). The village is surrounded by steep mountains with limited flat lands suitable for farming. The residences of 342 people and 22 households are scattered along the coastal areas. Public transport is accessible though the road is unsealed and there are no access roads to farms. Facilities include two shops, a water tank, primary school and two churches (Congregational and Baptist). About 70% of houses are European style. A new hydropower station had recently been constructed which provides the electricity but has lead to sea pollution and health hazards. Over the last 5 years, the village was involved in Bonus Scheme and in 1997, two church youth clubs and a family group were involved in extension programmes using the PLA techniques. The Baptist Youth Club, however, no longer exists due to poor leadership and mishandling of financial matters. Likewise the family group's membership has declined due to financial matters. The exception is the Congregational Youth Club which is financially sustainable, despite land shortages.

5.6.1.1 Agricultural Development and Crop Diversification

Taelefaga is a village where fishing, and some part time agriculture, were the main activities with kava and taro being the main source of cash. This village is located in an area suitable for kava where the soil is rich in volcanic ash. Cyclones and TLB have had an adverse impact on the economic status of local residents. During farm walks and from direct observation, it was determined that the level of agricultural activity was low. Agricultural production has declined to the stage where it is predominantly for home consumption. Farm size is small compared to previous years (Table 15) and a few crops are grown intensively in home gardens. Lands have turned to secondary bush. Rice is a staple food in everyday diets with the exception of the EO's families who are directly involved in extension programmes and have adopted the agricultural commercialisation and crop diversification technology. Vegetables are grown on small plots by the youth clubs and family group members which generate

sufficient income. Three people, cousins of the EO, have diversified into a banana “*fai palagi*” enterprise with farm inputs supplied freely by the EO (Appendix 3). Two cattle farms are owned by his cousins, despite a land shortage. One cattle farm has been established on 16 ha of village uncultivated lands. Each farmer has 20 animals, purchased from the MAFFM’s Livestock Development programme.

5.6.1.2 Community Development

There are two brick houses in the village which were funded by remittances and most people live in wooden, iron roofed houses. Construction of the hydropower station has contributed to the provision of better communication facilities (telephone, TV and radio) as well as electricity. Each household has the TV set, radio and refrigerator (Appendix 3, Table 3). The main road is unsealed but there is a government plan for it to be tarsealed soon. Food security is low except the EO’s families and relatives. A kava competition has recently motivated farmers to increase their farm production for export markets. Each household has a kava block, several prizes were awarded such as axes, spades, bush knives and the winner was from this village.

Table 15 Farm Characteristics - farm holdings, farm size, farm types and arable land

Name	Farm Holdings	Farm Size before TLB (ha)	Farm Size after TLB (ha)	Crops (type)	Livestock (number)	Unused Arable land (ha)
Siaosi	1	no land available	0.15	vege (cabbage)	21 pigs, 25 chicken	0
Gagoo	1	2 - 4 mixed crop	2.5 mixed crop	ban, vege, cn, bf, ym, ka	18 pigs, 20 chicken	0
Elenoa	2	2 - 5 mixed crop	0.75 mixed crop, 32 coconut	ka, ban, tm, vege, pand, cas, cn	1 cattle, 40 pigs, 58 chicken	35
Finau	1	1.5 - 2 mixed crop	0.50 mixed crop, 2 coconut	ban, ka, cn, tm	7 pigs, 34 chicken	2
Saitu	2	2 - 3 mixed crop	0.50 mixed crop, 2 coconut	ban, tm, ka, cn	12 pigs, 35 chicken	2

tp = taro palagi, tm = taamu, ban = banana, ym = yams, cas = cassava, gin, ginger, vege = vegetable, ka = kava, pand = pandanus, bf = breadfruit, cn = coconut, co = cocoa, chi = chillies

For people who are involved in an extension programme, vegetables are a major income source.

The Congregation Youth Club earned \$2,500 from vegetables to pay off the DBWS loan for youth band and has a bank account of \$300 (Table 16). The future plan is to diversify to peanuts and bananas but no land is available. The family group has a bank account of \$490 but income is distributed among themselves. The Baptist Youth Club earned \$600 from vegetable plot to build a new church although the youth club is no longer in existence.

5.6.1.3 Employment Opportunities for Rural Youths and Self-reliance

The crop diversification technology “gardening”, created jobs for rural youths and enhanced self reliance. All 15 Congregational Youth Club members and 30 children of the Sunday School participate in planting, weeding, watering, spraying and harvesting of vegetables. Sunday School teachers and children of 8-12 years are interested in working in the garden. Children water the garden every day and youths spray and harvest the crops (Appendix 3). Both youth club members and Sunday School children are self-educated and are self-reliant in decision making and future planning. The pastor is the patron who advises the members if assistance is required. Such an approach has improved their farming skills and knowledge.

Table 16 Household Income, Household and Farm Expenditure

Name	Annual Farm Income (S\$)	Non-farm Income	Household Expenditures	Farm Equip & Input Costs	Transport Costs
Siaosi	\$2500 from vegetable	Weekly: \$300 donations	\$1100 pay off loan	\$50 chemicals, \$40 seeds	own transport, \$20 fuel a trip
Gagoo	\$6000 from banana	Fortnightly: \$190 wages, \$150 fishing	Yearly: \$120 clothes, Weekly: \$40 church, \$50 faalave, \$30 medical, \$50 food	None, farm inputs provided by MCYS	government vehicle or hired transport
Elenoa	\$400 from vegetable	Fortnightly: \$400 remittance, \$119 wage	Yearly: \$150 school fees, \$100 clothes, Weekly: \$50 church, \$20 animal, \$50 faalave, \$40 food, \$20 medical,	None, old farm inputs	own transport, no market sale
Finau	None	Monthly: \$300 from remittance	Yearly: \$200 school fees, \$100 clothes, Weekly: \$40 faalave, \$40 church, \$40 food, \$10 medical	None, use old bush knives	public transport, \$10 bus, no market sale since TLB
Saitu	\$450 from coconut, pigs	Weekly: \$80 from fishing	Yearly: \$600 loan, \$80 school fees, \$100 clothes, Weekly: \$30 food, \$40 church, \$30 faalave, \$10 medical,	None, use old bush knives	public transport, no market, sale to middlemen

5.6.1.4 Women in Development and Family Group Approach

Group formation has encouraged women to work on the vegetable garden and to share the responsibility and decision making. Women’s productive workload increases as they join the family group. Before the vegetable plot Elenoa, a married woman, had weaving and fishing as major income sources, but now she spends 4 hours a day on vegetable plot. Every morning, she prepares food for the family on an outside oven, feeds the chickens, then she does weaving, washing and ironing. In the afternoon, she works on a family group garden with her husband and another family - Gagoo and his wife. Elenoa is involved in marketing of produce. Farm decisions are shared by two family members (Table 17). *“Its a family approach in which everybody work and*

make decisions". Elenoa is a dominant decision maker, her father is overseas. *"My husband has no right to make any decision. He is a faiava¹⁷ from one village"*.

5.6.1.5 Promotion of Private Extension

The concept of sharecropping has been practised by the EO and his cousin. The EO supplies all farm inputs, planting materials (laufasi) and technical advice while Gagoo provides the labour and manages a banana farm. Farm income is distributed between themselves. There is a speculation that European Union (EU) fund has been requested for the whole village (Appendix 3).

Table 17 Time Spent on Farm, Labour Sources, Occupation, Decision makers

Name	No. Of Hours Worked/day	Labour Sources	Husband/wife occupation	Decision makers
Siaosi (M)	2	Children (FT)	wife, retired civil servant	Joint decision
Gagoo (M)	6	Gagoo (FT), wife (PT)	wife, gardener	Joint decision
Elenoa (F)	4	Husband (FT), Elenoa (PT)	husband, plumber	Elenoa Dominant Decision maker
Finau (F)	1	Husband (FT), Finau (PT)	husband, retired civil servant	Joint decision
Saitu (M)	3	Saitu (FT), wife (PT)	wife, weaving, fishing	Dominant decision maker

* Mostly Involved

Decision makers

FT = full time, Joint decision = husband & wife, PT = part time, M = male, F = female

5.6.2 Identification of Factors Influencing the Adoption of Technology

5.6.2.1 Efficiency of Extension Service and EO's Accountability

The extension service is criticised as being a waste of government money and as being full of corruption. The EO is accused of having no integrity, a lack of accountability and for misuse of the MAFFM vehicle. A new extension station, funded by IFAD, is fully furnished but he never stays there. *"He lives in Apia with his wife, a staff nurse at National Hospital. Remove the house if he does not stay here"*. Meanwhile, the house is occupied by the casual worker (EO's brother in law) and his family, who earns a salary of \$190/fortnight. Village CBOs (matais, women committee, young men) complained that *"we never participate in programmes and its not useful to us 'cos of no contact with him but he is a matai of this village. He must be gone forever"*. The EO has been accused of working for his own families and not attending village fono (Table 18). However, the EO pointed that individualism is

¹⁷ Faiava is a man from another village who lives in his wife's family.

preferred by the village people. *"Its difficult to convince them on the concept of cooperation"*.

Table 18 Major Constraints, Prioritised Farming Activities and Peoples' Needs

Name	Types of Constraints	Prioritised farm Activities and Needs
Siaosi	no land, roam pigs, expensive farm inputs, no knowledge of obtaining funding	vegetable, banana (fai palagi), kava; stay in office; conduct the PRA exercise, application for overseas funding
Gagoo	shortage of land, waterlogging, roam pigs, social obligation	vegetable, kava, cattle farm, cocoa; establish village nursery.
Elenoa	shortage of planting materials, crop pests/diseases (TLB, snail, fungus), EO work for his families, social obligation, expensive inputs, higher transport costs	vegetable garden, cattle farm, banana, pandanus, kava, pigs, chicken, promote mass media (TV, telephone)
Finau	lack of capital, shortage of planting materials, expensive inputs, roam pigs, social obligation, church donation, crop diseases (TLB), no contact with EO	kava, pandanus, banana, cattle farm, coconut, pigs, chicken, contact the women committee and village fono, develop contact with MWA,
Saitu	lack of capital, shortage of planting materials, expensive inputs, crop pests/diseases, no contact with the EO, lack of farming skills	vegetable, coconut replanting, kava, pandanus, pigs, chicken; develop rural markets, input suppliers and banks;

Women's committee members identified that direct consultation with the EO is a fundamental tool to motivate all women. Finau (president of women's committee) pointed that *"difficult to convince them, especially less educated and old members. They want to work individually"*. Some technical advice and training on ways of improving women's roles (sewing, cooking, gardening, handicrafts) in the community are required. *"We need a female EO to discuss our needs. The EO feels shy to communicate with us"*. Women are concerned that male EOs are too many and not all farmers are men. Husbands and wives have equal rights and responsibilities in household businesses.

5.6.2.2 Leadership and Handling of Funds

Village CBOs with good leadership and proper handling of funds are financially sustainable but those without these qualities are short-lived. The Baptist's Youth Club is the first CBO that was involved in the FSP but it no longer exists. Out of 23 members, 8 have resigned due to poor leadership and mishandling of funds. Although income derived from the vegetable plot built a new church nothing was saved for its continuity *"president and priest steal all money"*. The new priest and other members, however, have planned to continue it with a bank account of \$100 plus contributions to purchase seedlings and piggery wire (Appendix 3). Attitudes towards the free gifts (farm inputs) from MAFFM has not been changed. This is demonstrated by requests for free materials. The Congregational Church's Youth Club is financially sustainable

due to good leadership by the pastor and proper utilisation of funds. Thus it has high participation, and the membership of youths has requested alternative funding to establish a banana farm.

5.6.2.3 Socio-economic development level and Commercial Opportunity

Those with higher socio-economic status and commercial opportunities, adopt the technology quickly to increase farm production, income and a better standard of living. However, the exception of the EO's cousins, farm activities are operated on subsistence basis. There are concerns that the VAGST has increased the input costs too much and resulted in an increased area of uncultivated lands.

Finau and her husband have decided to start a commercial banana "fai palagi" enterprise but inputs are considered to be unaffordable. Piggery wire from the ASC costs \$180/roll, the price of fertiliser has risen from \$18 to \$25/bag and weedicide from \$20 to \$24/litre, though these are subsidized prices. Gagoo is the EO's brother in law who sharecrops a "joint venture" with him. He manages a 2.5 ha commercial banana farm and all inputs are supplied by EO from the EU fund. He is able to pay \$50 for hired transport to sell his bananas to the urban market at \$20-30/bunch (See Table 15). However, there is a speculation that the EU funds that have been allocated to village farmers are only going to the EO's family.

5.6.2.4 Transportation Costs and Access to Government Services

Agricultural development is constrained by high transportation costs. People with no transport have no intention to increase their farm production. Siaosi is a patron of Congregation Youth Club who has a pick-up (small truck) to deliver vegetables to the urban markets. The Club has also signed a market contract with the Samoa College hostel to supply vegetables. Finau grows a few crops for consumption but not for sale. Saitu sells coconuts to the Samoan Coconut Oil Ltd's truck travelling around the island. *"It's unprofitable to market, bus fare is \$10 for a return trip plus \$5/bag of produce which is too much".*

5.6.2.5 Land Ownership and Group Formation

Only families with assets and civil servants are eligible for DBWS loans although a new lending policy review now allows small group loans. Before the review, loans can be secured by personal guarantee and assets but not customary lands. Group formation could resolve the problem in compliance with the lending policy review which allows farmer group loans.

The Congregational Youth Club had received a group loan of \$1000 from the DBWS to purchase a secondhand youth band. Ulisese is a progressive farmer and his wife is a school teacher. He owns 3 buses, 1 pick up and 1 store which are used to guarantee the \$10,000 loan for his cattle farm. Saitu has decided to establish a cattle farm but there are no personal guarantors and freehold land.

5.6.2.6 Other Financial Support

Households that derive income from remittances and wages are reluctant to participate and adopt the technology. Finau receives \$300/fortnight from relatives overseas. Money is spent to pay the electricity bills, school fees, food, church donations and social obligations. She is reluctant to participate in extension programmes because of the low level of support by MAFFM staff.

5.6.3 Summary

Taelefaga village is characterised by low agricultural development, low household income, social inequity, and little community development in terms of housing and other activities. A new school and church renovations were funded by government assistance and remittances. There has been a low adoption of crop diversification technology except for the EOs family. Agricultural production is predominantly used for home consumption and much land remains uncultivated. Rice has become a staple food as food supply is scarce. However, the establishment of the family group and involvement of two youth clubs has introduced crop diversification and compost technology to the village communities. The Congregation Youth Club is eligible to get a group loan from DBWS which has been used for a youth band and to finance their vegetable garden. Establishment of the vegetable plot has created job opportunities for youths and children to gain self-reliance in decision making and self sufficiency in food supplies, and improve their agricultural knowledge and skills. The participation of women in farmer groups and youth clubs has helped them to achieve some of their productive, strategic and community needs. Women are involved in farming, marketing, decision making and perform a leadership role while men are away.

Unfortunately, the adoption of modern technology is constrained by ineffective extension service in terms of lack of accountability and apparent abuse of government resources. The impact of extension programmes has been inequitably distributed amongst the population which has resulted in mounting criticisms despite the EO's

effort in kava competition to promote export production. It is suggested that the programme should be channelled through the village fono but individualism is still preferable. The Baptist Youth Club was short-lived due to poor leadership and financial mismanagement that discouraged the youths participation. Adoption of technology is affected by socio-economic status and commercial opportunities of people, particularly subsistence farmers, who cannot afford the production costs due to their ineligibility for credit. The exception is the EO's cousins who have practised sharecropping. Agricultural development is constrained by high transportation costs which limits access to supporting services except for those who own vehicles. Off-farm incomes from remittances, wages and government assistance deteriorate the community participation and influence the financial sustainability of farmer groups and community development activities.

5.7 Chapter Summary

This chapter presents the results of the interviews based on the research questions. The results were classified into two major categories. Policy makers' perceptions from government agencies, non-government organizations and private sector towards the impact of new government policies on the MAFFM's extension function are presented. Farmers' perceptions towards the impact of the MAFFM's extension function upon four villages' development and factors influencing the technology adoption are also described.

CHAPTER SIX: DISCUSSION

6.1 Introduction

This chapter discusses the most appropriate extension system for Samoan farmers that will be used as an instrument to improve agricultural development, national food security and social well-being. Section 6.2 reviews and discusses the trends in government investment on the MAFFM, and Extension Division, in the last three decades. Policy makers perceptions over the impact of new government policies on the MAFFM's extension function and future trends in Samoa's agricultural extension are examined in Section 6.3. Section 6.4 reviews both the practical and conceptual debates identified in the literature and attempts to reconcile the views of the policy makers and community concerns in a Samoan context. The impact of the MAFFM's extension programmes on rural community development and the factors influencing the adoption of technology are reviewed and discussed. Section 6.5 discusses the divergence in socio-economic development of women involved in MAFFM's extension programmes. Section 6.6 identifies community development needs highlighting the need for an integrated approach to achieve community development. Government interventions through institutional and rural infrastructure development, facilitating technology transfer to rural communities, are discussed.

6.2 Past Trends in Samoan Agricultural Extension

In the early 1960s the MAFFM's extension service had been decentralised with the establishment of district extension stations that were equipped with improved facilities, suitable transport system and recruitment of staff personnel. This was consistent with the government emphasis upon improving extension services to farmers to achieve higher agricultural development, national food security and social well-being (Rehman, 1984; Wendt, 1985). The General Agricultural Extension (GAE) approach was the dominant approach used where technology transfer was achieved through a combination of individual visits, group methods and mass media communication. The Government borrowed from international lending institutions to strengthen the MAFFM's extension function and increased the Extension Division budget to sustain its operating expenditures as was recommended by donor agencies. Technology adoption, however, was unsuccessful due to the farmers' lack of access to supporting services such as credit, farm inputs and rural infrastructure. The GAE

approach was found by Axinn (1988); Rogers (1996) and Swanson et al (1990), to be too expensive for developing countries' governments because of its high recurrent cost demand. The donor agencies and recipient governments ambitiously assumed that the technology transfer would be improved, however, it was unsuccessful because of unavailable complementary farm inputs, credit, storage for produce and marketing (Roling, 1988; Hayward, 1990).

In the 1970s, state-owned enterprises, lending institutions (DBWS), input suppliers (ASC) and pricing stabilisation schemes, namely Suspensory Loan Schemes and Bonus Scheme, were developed to channel government subsidies to farmers. Few private companies were in operation and were mostly short-lived as a consequence of unfair market competition. Burrows et al (1991), Leonard and Ooi (1995) recognised that the ASC, a state-owned enterprise and monopoly supplier, has hindered private sector development.

In 1972, rural development projects were introduced and administered by the Prime Minister Department's Rural Development Division in association with other government agencies and non-governmental organisations. These village agricultural development (poultry, piggery and cattle) projects were fully subsidised and included credit schemes, free government services and subsidised farm inputs. As a consequence, these projects were successful in terms of increased farm production, higher income and better social welfare but had limited financial sustainability. In addition, there was a lack of market opportunities, a lack of accountability and poor output performance leading to corruption. There was also limited community consultation, and a lack of coordination and communication between implementing agencies (Imo, 1985; MIA staff, personal comm.).

Farmer associations were also successfully established but were short-lived due to distrust, leadership and financial mismanagement. These projects were found by O'Meara (1994) to be rarely sustainable because of different work efforts and trustworthiness of people, unclear village authority structure and development of distrust among members as land being worked belongs to a few members. Communal work is more efficient but it depends on the integrity of active members because theft is a problem. Many projects are designed and controlled by government bureaucrats and donor agencies without community consultations resulting in irrelevant technology and political corruption (Chambers, 1988; Cummings Jr, 1990).

In the early 1980s small extension services were developed within the Forestry, Fisheries, Livestock and Crop Division by various projects which resulted in additional resources and increased budgetary allocations to MAFFM (Figure 7). However, the linkage between research, extension and farmers was found by Rehman (1984) and Wendt (1985) to be inadequate as field extension officers were poorly trained, inexperienced and overworked, and using ineffective methods. These small project-driven extension services were financially unsustainable beyond the project life. For example the service established by the AIDAB Cocoa Project in 1985 for growers was abolished, then the EOs were posted as generalists leading to duplication of services (Lubett, 1997).

In 1984, the T & V system was introduced to improve the staff supervision, logistical support and narrow the extension focus to concentrate upon technology transfer, despite the fall in the MAFFM budget (Figure 7). This fall was facilitated by the world market recession which resulted in economic instability coupled with political uncertainties (Fairbairn, 1991). National research and district extension stations were upgraded and new vehicles purchased which led to higher recurrent costs. Technology transfer was channelled through contact farmers, mostly progressive farmers, but Cummings Jr (1990) recognises that the T & V system is most applicable to progressive farmers as technology cannot be shared with subsistence counterparts due to the poor farmers' limited participation in decision making and access to farm inputs.

MAFFM field extension staff were trained by SMSs, consistent with their rigid schedules of activities. The organisation, management and professionalism were improved through regular staff training, however, in mid 1988, the T & V system was temporarily suspended due to financial constraints. The Government Budget was spent on staff salaries, rather than on recurrent costs, which impacted upon staff mobility and also supervision (Lubett, 1997). Additionally, the government interventions in the agricultural sector were funded by international loans and government budget to sustain the MAFFM's extension function. These loans and expenditure coupled with subsidies, tariffs and quota aggravated the budget deficit and increased external debts. The T & V system is recognised by Hayward (1990) and Ameer (1994) to rely entirely on government budget and international loans which imposes considerable burden upon government and ultimately the taxpayers. The T &

V system is unlikely to lead to sustainable increases in production unless effective research, incentives, inputs and infrastructure are available.

6.3 Present and Future Trends in Samoan Agricultural Extension

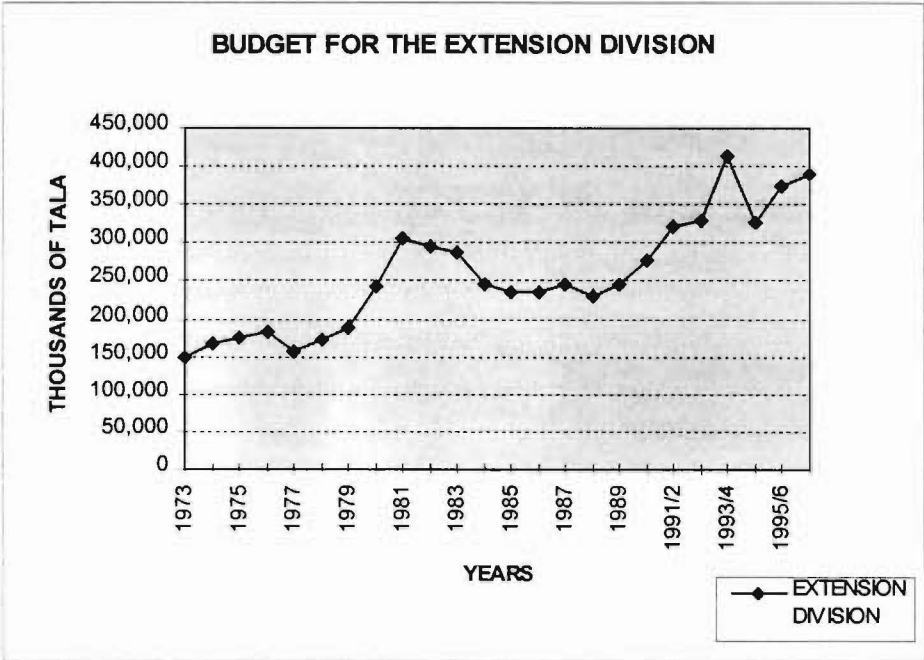
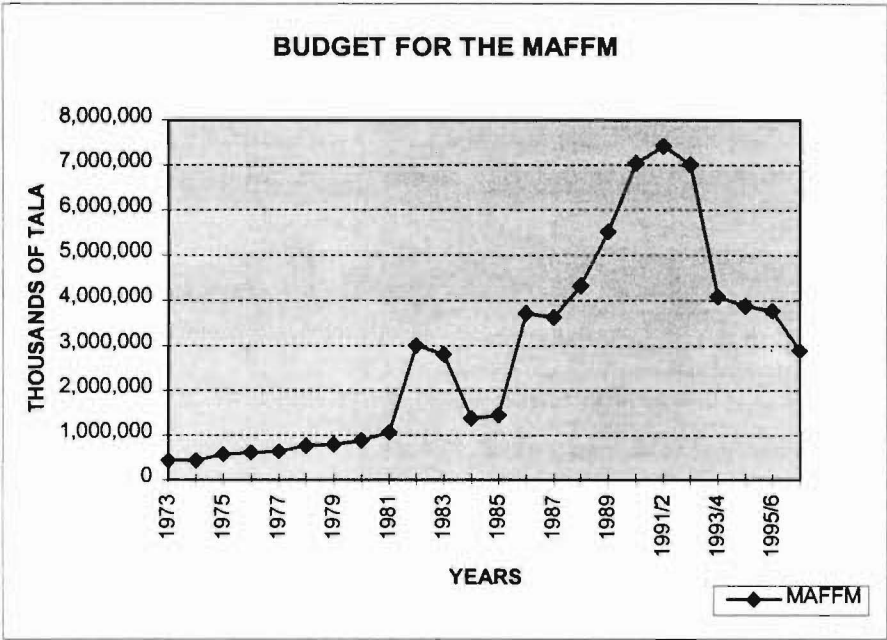
In the early 1990s MAFFM's operating expenditure fell significantly. This fall was due to the economic instability as a consequence of the devastating hurricanes and the adoption of new economic policies by the government. As part of its macroeconomic restructuring and reform, the Government has launched a Statement of Economic Strategy (SES) and a new Output Performance Budget system. The macroeconomic restructuring has emphasised the improvement of efficiency, free market competition, the public sector's rationalisation with clearly defined career paths, accountability of strengthened middle management and appropriate incentives and maximisation of the private sector's economic role (GWS, 1995). Consequently, this has led to removal of casual workers from the government services and most work is now performed by rural communities and the private sector on a contractual basis.

The expenditure upon the Extension Division was steady over the 1980s, increased significantly in the early 1990s due to hurricanes and TLB occurrence, then showed a sharp fall in 1993 and 1994 as a consequence of the new system of budgeting. Government department budget estimates and performance reports have focussed on planned outputs rather than on inputs alone which is consistent with its commitment of efficient allocation and utilisation of limited budgetary resources. Expenditure upon Extension Division in 1994/95 and 1995/96 has increased as the emphasis has been upon the development of FSD approach as recommended by consultants (Lubett, 1997; Burrows et al, 1991) (Figure 7).

6.3.1 Search For Other Systems of Agricultural Extension

Like many developing countries, the Samoan government has learned lessons from its past experiences with the MAFFM's fully funded extension service as the only provider of technology transfer, which still imposes financial pressure upon the government budget. The extension systems introduced in the past are seemingly inapplicable in the Samoan context, as most farmers are semi-subsistence and have limited access to a better supporting environment.

Figure 7 Budget Allocations to MAFFM and Extension Division (1973-97)



Lubett (1997) found that there has been limited integration of social issues in past extension efforts with emphasis placed upon the progressive farmers' needs. This is due to the poor participation of target beneficiaries in the decision making processes. Agricultural extension systems initiated by donor agencies are recognised by Ameur (1994) and Farrington (1994) as having placed developing country governments in a financial crisis. These extension systems are more applicable in developed countries where commercial farmers have access to a range of complementary services.

The Samoan Government is thus exploring other options to resolve these problems by prioritising the “*bottom-up*” extension approaches and possibly expanding the private sector’s role as recommended by recent studies (Leonard and Ooi, 1995; Lubett, 1997) with the aim of providing a more effective service to farmers while reducing government spending. Coincidentally, public criticisms are mounting over the government’s investment on the MAFFM’s extension function which is still inefficient and ineffective in terms of mobility, accountability and appropriate technology.

The Government has been accused of wasting its limited budgetary resources on this portfolio where there is seemingly little indication of benefits to farmers. Leonard and Ooi (1995) recognise the considerable government investment on the MAFFM’s extension service through the introduction of various systems, however, there has been little indication of financial sustainability and achievement of farmers needs. There are arguments for maintaining the present, *top-down*, system, but there is insufficient government financial support. The FSD approach in Samoa, for example, has been criticised for being financially unsustainable beyond the project life as there is weak coordination and communication between the MAFFM and other implementing agencies plus questionable community participation. This would accordingly imply the possibility of developing a private extension service. However, there are concerns that a private extension service would not benefit the whole community due to an unaffordable service plus serious concerns over staff redundancy leading to higher urban unemployment and other related social problems. Furthermore, the FSD approach has been criticised as targeting farmer groups, mostly progressive farmers. Hence the FSD approach has been channelled through village CBOs such as farmer groups, women committees, youth clubs utilising RRA/PRA techniques. Antholt (1994) found that Thailand has adopted the “*participatory farmer approach*” after experiencing T & V system for 5 years in the last decade as the increased crop diversification and cropping intensity could not be linked reliably to the investment in the T & V system (Section 3.4.3).

6.3.2 Private Extension Development

Although the Government has prioritised “*bottom-up*” extension systems to improve the MAFFM’s extension service, there is currently little indication of it relieving the financial pressure upon the government and of improving socio-economic

development. Arguably, there are no exceptions for the government and the promotion of private extension service is a possible option which is consistent with the new economic policy platform. Meanwhile, the government has committed to achieve a slimmer and more effective public service while boosting the private sector's leading role in sustainable economic growth and establishing mutual partnership (GWS, 1995; 1997).

Conceivably, the private sector would contribute to sustainable economic growth in terms of employment creation, effective delivery of service, abolition of government incentives and subsidies, and reduction of government spending on physical resources and operating expenditures. There is a limited private extension service already in operation which is implemented by local entrepreneurs (Wilex Marketing International and CCK Ltd) and they provide educational activities, input sales and market promotion. Free written materials, technical advice and transport services have been provided to their clients. Significantly, some financial support to motivate kava growers in Taelefaga village has been provided to boost the export production and their willingness to support farmers associations has been expressed in terms of price support schemes and educational programmes. The privatisation of the MAF' extension function in New Zealand, as discussed by Milligan (1996), creates the opportunity for private consultancy services to employ the redundant staff. Hence, the MAF staff have been employed on contractual basis which improves efficiency and accountability, and reduces the government expenditure.

The new government policy scenario of reduced spending on the MAFFM's extension service is promoted by Treasury, MIA, PSC and private sector officials despite the lack of consultation and dialogue between the two sectors. Obviously, there are feelings of uncertainty and insecurity with regard to their partnership in terms of government incentives prior to opening up free market competition. Predictably, the new partnership would initially lead to a complementary service, with the MAFFM's extension service concentrating upon the cash/subsistence communities while private companies deal with progressive farmers. The T & V system in India was found by Ameer (1994) and Farrington (1994) to effectively deliver technology to increase crop production by recruiting more highly qualified staff and by providing credit. The system, however, aggravated the budget deficit. Thus the Indian government is exploring the role of private sector in extension to share the costs and responsibility with the farmer beneficiaries.

There are, however, serious concerns about unaffordable services and urban migration of rural labour force that might lead to lower agricultural production, income, national food security and foreign earnings. This might also result in social inequity, inequitable redistribution of income and social costs as a consequence of lower technology adoption. The privatisation of the MAF's extension service in the Netherlands is recognised by Schwartz (1994) as causing the social problems (unemployment, social inequity, crime and rural poverty). Furthermore, Samoan policy makers have argued that the MAFFM's extension service, and the private consultancy service practised in New Zealand, are incomparable because of strong agricultural commercialisation in New Zealand. Commercial farmers in New Zealand can afford the reliable and effective private consultancy services, whereas majority of Samoan farmers are semi-subsistence and reliant upon government assistance. Consequently, there are warnings that some foreign consultants' recommendations are irrelevant to local situation due to their limited knowledge of the traditional culture and customs of the "*Samoan Collective System*".

6.3.3 Restructuring and Strengthening of MAFFM's Extension Service

Rahman (1988) noted that the public sector had serious financial deficits which affects R & D expenditure. There is the prospect of price reduction and fall in foreign reserves due to poor income distribution policies, lack of efficiency and accountability, and faulty decisions.

Undoubtedly the MAFFM's extension service has contributed to the government's budget crisis. Policy makers are seriously concerned about the public criticisms, and consultants' findings, of an ineffective extension service in terms of mobility, accountability and waste of limited budgetary resources. There are continual abuses of government resources, for example, misuse of government vehicles for personal agenda and extension stations are reportedly vacant which cost the government thousands dollars for house maintenance, casual labour and land leases (MAFFM, 1996). Commonly, the MAFFM's main office in Apia is contacted if assistance is required which questions the objectives of constructing stations in rural areas. Evidently, most extension stations remains uncomfortable, there is a lack of incentive for staff to perform and transport. Actually, the stations are no longer acceptable for extension activities as village meeting houses are culturally preferable.

Vickers and Yarrow (1989) recognise that the public sector has unclear objectives, multiple line of communication and poor incentives to monitor managerial behaviour.

Higher wages are offered for unproductive staff but services are unsatisfactory, there is poor financial performance and low allocative efficiency due to excessive absenteeism and surplus labour which imposes additional costs to wage bills. There are concerns about the fragmented nature of the MAFFM's extension service which contributes to higher recurrent costs and the duplication of services. Burrows et al (1991) and Leonard and Ooi (1995) found that there were weaknesses in the organisational structure, for example, the delivery of service to farmers is unreliable due to lack of planning, communication and coordination. Lubett (1997) found that the system was fragmented, largely commodity oriented and driven by externally assisted projects. He assessed it as largely ineffective, a waste of limited budgetary resources and financially unsustainable.

It is considered that the new budget system should improve the efficiency, accountability and output performance. This should avoid the abuse of government resources through the establishment of an incentive package (promotion, salaries, training) to improve human resource development. There was no such strategy, in the past, which could assess accountability and efficiency within the public sector.

Meanwhile, the Treasury Department and Public Service Commission have been collaborating with MAFFM over the devolution of finance and personnel functions. The main focus is on priority areas of efficient budgetary resource allocation and utilisation to achieve fewer outputs and better performance (GWS, 1995; 1997). Field extension staff have reportedly been accused of no integrity, lack of accountability and unsatisfactory performance as a consequence of poor staff management. Conceivably, the new budget system would monitor and evaluate the output performance more efficiently within the public service. In the meantime, the Director of Agriculture is being employed on contractual basis and MAFFM staff output performance is being monitored regularly by responsible officers.

The implementation of these procedures should definitely improve the managerial and financial skills of executive personnel. Significantly, there is a possibility of contacting the Treasury and Cabinet for additional funding to achieve expected outputs, if performance is inconsistent with budgetary allocations. The restructuring of MAF extension function in New Zealand was found by Milligan (1996), improved the accounting systems and management performance by employing managers and

staff on contractual basis. Performance and rewards were based on result achievement which reduced the budget for staff and administrative costs.

There are concerns, however, about the efficiency of the MAFFM's extension service in terms of budget cuts on physical resources and operating costs. The government should be cautiously selective on which parts of the service to be reviewed otherwise social costs may be high. Rural communities are a crucial part of the national economy, especially where agricultural exports are being produced for foreign exchange to improve the balance of payments. Budget cuts would reduce the number of casual employees but not extension resources (e.g. vehicles) for contacting the rural poor. However, the majority of the casual workers are urban migrants who have moved for a better life and their children's education, and have no lands for agricultural development. There are few companies in Apia to provide jobs. This illustrates, as Taulealo (1993) claims, that the scope of private sector is too small to create sufficient employment opportunities. Yazaki Samoa¹⁸, for example, did not have the capacity to absorb both redundancies and urban migrants following the collapse of the taro industry.

Rural communities would become isolated which might result in lower agricultural development, household income, rural poverty and social inequality. As a matter of fact, only progressive farmers can afford the transportation costs and benefit from the MAFFM's extension service. Furthermore, the mass media has been perceived as ineffective in terms of technology transfer because of the low educational level of farmers. Unfortunately, the extension service is, at present, lacking a funding which leads to a shortage of transport and fuel for extension activities. Public bus is a means of transport and extension stations remain uncomfortable and there are few incentives for staff which leads to poor motivation.

6.3.4 Abolition of Government Incentives and Subsidies

Ott and Hartley (1991) advocate that government intervention impedes private sector development and agri-business institutions in economic development. Government subsidisation, for example, places heavy burden on public budget particularly the taxpayers.

¹⁸ Yazaki is a Japanese automotive company which employs a considerable number of urban unemployed population.

The Samoan Government has continually intervened in agricultural development since the 1960s, by offering subsidies and price controls on distribution of agricultural inputs/outputs. This has led to a substantial reduction in efficiency and productivity with few benefits to a disadvantaged population. Farm inputs are subsidised and price supporting schemes (e.g. bonus scheme for cocoa, coconut and kava) are continuously developed to provide a favourable environment to farmers. Due to criticisms and allegations by commercial producers and the private sector towards the ASC's monopoly operation, the privatisation of ASC has been proposed. Leonard and Ooi (1995) found that to be consistent with government economic objectives, the ASC should not be in business of producing and marketing agricultural produce in competition with the private sector. Thus, the ASC should be privatised (Burrows et al, 1991).

The privatisation of ASC would contribute to elimination of subsidies and abolition of the bonus scheme which is consistent with new government policy of privatising its state-owned enterprises and of promoting the leading role of the private sector in economic development. This would reduce the demands upon government expenditure and create a more favourable environment which is conducive to free market competition for both local and foreign investors. It is however, dependent upon how strong the competition will be. Few private companies exist, which might lead to unaffordable production costs and lower agricultural development. Additionally private companies are profit-driven organisations whose main goal is profit maximisation. Arguably, the ASC's privatization is a public issue which may require a national referendum or public debate because of the only avenue to channel the government assistance to poor farmers. Rural communities are currently finding economic conditions difficult following the natural disasters and adoption of new economic policy, for example, the introduction of the VAGST.

Privatisation of the ASC is a necessary option but the bonus scheme is worthwhile to boost export crop production over a short period of time but unnecessary to continue in the sense of sustainable economic growth. Subsidies contribute to the over-reliance of farmers on government assistance without any intention of becoming a self-reliance and self-sufficiency. Arguably, the ASC's operation is consistent with the government mandate of increasing agricultural exports by channelling its subsidies to farmers, and contributes significantly to national foreign exchange and balance of

payment (Section 5.2.4). The Bonus Scheme is also recognised by Retzlaff (1995)¹⁹, as necessary for subsistence farmers to stimulate the growth of export crops following the natural disasters otherwise production costs would be unaffordable.

6.3.5 Promotion of Agricultural Commercialisation

The Samoan Government has moved towards privatization as an instrument to implement its macroeconomic reform and restructuring policies which will lead to a reduced budget deficit. Structural adjustment programmes have been implemented to transform the state-dominated economy into an export-oriented one. The Agriculture Sector has played a notable role in the national economic recovery. Conceivably, new government policies would promote the agricultural commercialisation to resolve socio-economic problems faced in the agriculture sector by exposing rural farmers to crop diversification technology and the concept of agricultural commercialisation through advanced agricultural training plus the promotion of the private sector role, farmer associations and cooperatives. Van Den Ban and Hawkins (1996) recognise that many countries have privatised and restructured their publicly funded extension service due to budget deficits and the growing degree of agricultural commercialisation within their economies (Ameur, 1994; Schwartz, 1994).

Predictably, the adoption of market liberalisation policies would consolidate a strong partnership between the government and private sector that would lead to a complementary extension service. Expectations would be that some of the functions and services presently undertaken by government, for example, the MAFFM's extension service, would be effectively performed by the private sector. Private firms would deal with commercial farmers while the MAFFM's extension service would provide services to smallholders. Leonard and Ooi (1995) recognise that in developing agricultural policies and strategies, the government should work closely with industries in which farmers have unlimited access to a range of services and employment opportunities to improve agricultural development and rural life. The restructuring and privatisation of the MAF extension service in the Netherlands as part of macroeconomic restructuring and reform was found by Umali and Schwartz (1994) to have costs and responsibility shared by the private sector and government as the government divests its extension activities. The restructuring of the MAF

¹⁹ Minister of Agriculture's keynote address of the Round-Table Discussion (Workshop) on the Agriculture Sector Strategy Review, 10th November 1995.

extension service in Chile was recognised by Ameer (1994), to force commercial producers to seek information from private firms while the government is sharing the costs of the service with small farmers. Evidently, the public extension cannot be replaced entirely by private extension but has contributed to the elimination of subsidies and abolition of price supporting schemes while providing incentives for private advice. The Chilean government is thus concentrating on policy making, educational training, environmental and social issues which reduces its budget deficit and foreign debts. The extension service has been effective and affordable. Farmers become selective when seeking advice which they pay for. This has been identified in the literature review (Section 3.7).

The adoption of new economic policies would stimulate both local and foreign investment and contribute to economic development activities which would reduce government spending and the need for intervention. Accordingly, private investors normally concentrate on prospective markets which stimulate agricultural development, however, the involvement of private companies in the village sector is limited due to the risky nature of commercial agriculture, land fragmentation and the land tenure system. There are also allegations of too much government investment in the commercial sector rather than in the traditional sector where rural infrastructure and institutional development (banks, input suppliers, markets) are poor despite abundant labour and land resources. Such a policy imbalance may result in socio-economic problems. Agricultural commercialisation cannot be successful without a comprehensive national commercialisation policy, institutional linkages and networking, and coordination (Rahman, 1988). A conducive policy and an institutional environment are important but these are overlooked by agricultural policy makers. Leonard and Ooi (1995) advocate the creation of a business friendly environment for private sector by removing all unnecessary restrictions on business operation and profitability, monitoring the private sector's performance, identifying constraints and issues, and formulating policies to address the constraints before providing incentives.

6.4 Community Development Activities

During the Farming Systems Workshop conducted in Samoa by FAO consultants in 1995, the participatory approach was recognised as being successful in South Pacific countries. This approach coordinates the full participation of researchers, extension

staff, other service organisations and local community based organisations (women, farmer groups, youth clubs, church) in democratic consultations and negotiations to ensure community development through employment creation and positive activities leading to self sufficiency and self reliance (FAO, 1995).

6.4.1 Villages in Low Community Development

Village communities indirectly participating in MAFFM's extension programmes show unsatisfactory agricultural development leading to vulnerable socio-economic development. A low adoption of crop diversification technology has resulted in uncultivated lands, little changes in farming systems, lower household income and food security, and social inequality.

Rural population are dependent upon off-farm employment for the "*social collective system*" and other community activities. Taelefaga, Samalaeulu and Malaemalu are characterised by low agricultural development as the households' major income is derived from wages, remittances, sales of fish and handicrafts which are used to meet their social obligations, church donations and children' education. Farm production is predominantly targeted at home consumption and is based on the traditional farming systems (mixed-cropping). The over-reliance on outside assistance has been evidenced by existing village development projects (church, schools) and personal assets (TV, radio, refrigerator) which are solely financed by government assistance and remittances. However, the formation of farmer groups in these villages educates rural communities in the concept of agricultural commercialisation and facilitates the adoption of crop diversification technology to increase agricultural production. The involvement of the Malaemalu and Taelefaga village youth clubs in MAFFM's extension programmes using the Participatory Learning Action (PLA) techniques, for example, has introduced new commercial crops and compost technology which are conceived to be economically, financially and environmentally sustainable methods of increasing vegetable production and provide cheaper fertiliser substitutes. The establishment of vegetable plots in Taelefaga has increased vegetable sales to urban markets and reduced expensive farm inputs demands despite a land shortage.

Technology adoption, however, has been unsuccessful due to questionable community participation as a result of the EO's lack of accountability, ineffective extension approaches and inadequate financial support. Apparently, only farmer

groups and youth club members benefit while the rest of community are still struggling for survival. Although the PRA technique has been modified to counter the inflation of villagers' expectation, the PLA technique does not, seemingly, improve the mobility of extension, accountability of field extension officers as well as community participation. In fact, the EO cannot co-operate all components of the community by himself unless the village fono is contacted through the Pulenuu. Apparently, there is no relationship and consultation between the EO and other village key informants (Pulenuu, women's committee and village fono). There is a feeling of uncertainty about the impact of the MAFFM's extension programmes on agricultural development and rural life. Accordingly, there is no guarantee for such a technique to resolve a complexity and diversity of people's needs because of too much criticism and frustration. The women's committee and village fono in Malaemalu village have questioned the aim of extension programmes and accused the district field extension officer of neglecting their participation and of not residing permanently in the station. Burkey (1993) recognises the policy makers make wrong assumptions that local people have common needs and justifiably bind them together but this is unrealistic as the better-off benefit most. It is unrealistical for a single extension system to serve all groups of farmers' needs due to different technological and educational levels plus variations in agro-ecological conditions, socio-economic environments, and administrative system (Swanson et al, 1990).

The MAFFM's extension service is criticised as being ineffective showing lack of accountability, abusing government resources and of corruption. This is highlighted in Taelefaga village where the EO's family have received considerable benefits while the rest of the community are living in poverty and vulnerable conditions. This has been demonstrated by the farmers concentrating on low-income enterprises which result in lower household income and poor standard of living. The EO's families share the benefits of EU financial assistance which has been proposed for village agricultural development.

Other village CBOs have thus questioned the efficiency of MAFFM's extension service and government budgetary allocations. The present system has been criticised for wasting the government money on house maintenance, casual workers and land leases while stations remain unoccupied. For example in Taelefaga a new extension station is currently occupied by a casual worker (a cousin of the EO) while the EO is living permanently in Apia area but the government pays the casual worker and for

the lease of EO's land. However, the government investment on the MAFFM's extension service is limited as is evidenced by the EO's complaint about no living allowance and low salary. Public enterprises, as found by Rahamnadham (1988), are full of bureaucratic and political influence which lead to serious financial deficit and inequitable income redistribution.

Futhermore, the adoption of technology in Samalaeulu, Malaemalu and Taelefaga village is constrained by land tenure system. Farming on customary lands has discouraged the majority of the local population to participate in extension programmes and affected their involvement in profitable enterprises.

Saitu has not invested in a cattle farm as his customary land cannot be used as collateral and he has no personal assets. Moli, a progressive farmer with the accumulation of personal assets, has great access to DBWS's agricultural loans for farm development. Scattered land ownership among extended family members, a mix of matai titles and ancestral transfers and village authority has limited technology adoption. The land dispute in Samalaeulu village has, for example, reduced the communities participation, especially the Catholic followers, in extension programmes and resulted in lower community development.

High transportation costs limit the accessibility of rural communities, except for higher economic status farmers, to centralised supporting services (ASC, DBWS, markets). This has resulted in lower adoption of modern technology and agricultural development. Centralisation of these supporting services coupled with the introduction of VAGST and the occurrence of TLB have penalised the lower socio-economic farmers. Taelefaga farmers are still concentrating on low-income enterprises such as fishing, weaving and coconut selling to middlemen to counter the higher transportation costs. Although the DBWS's rural bank office is accessible, it does not seemingly resolve the higher transportation costs. Malaemalu farmers have travelled to the Apia main office (a distance of 120 km) for loan transactions. Farm production is predominantly for home consumption and village sales are at low farm-gate prices but do service the local tourism industry.

Lusila has a subsistence vegetable garden due to high transportation costs and inaccessibility to urban markets. Commercial production is considered uneconomical and time consuming despite higher marketable prices. Farm produce is thus sold locally to tourists and middlemen.

Roger's centralised diffusion model is criticised by Clark and Stauton (1989) as having little trickle down effect and overlooks other problems of extension (land tenure, labour, economic status). Advanced adoption of crop diversification

technology by progressive farmers has been facilitated by their strong economic status which allows their accessibility to supporting services.

Moli has diversified from taro to banana "fai palagi" commercial crop and a cattle farm due to higher market prices. His strong financial background qualifies him for a DBWS loan regardless of his non participation in extension programmes.

The "*Samoan Collective System*" imposes a heavy financial burden on rural people's life. Its impact is to limit the technology adoption due to high production costs and limited savings for farm development despite their willingness to participate. Overspending of household income on these financial commitments affects self-reliance and self-sufficiency. However, it is a traditional obligation and failure to participate carries a considerable price. Roling (1988) advocates that the success of technology adoption cannot be measured by just observing the behaviour of individuals as they have differential accessibility to land, inputs, social and cultural differences (Swanson et al, 1990). It is evident that the Samoan Collective System is no exception although villagers are highly trained in the field of agricultural marketing, entrepreneurship and agribusiness. The achievement of sustainable economic growth as found by Johnson and Dhal (1997); Burrows et al (1991), can be strongly influenced by the strength of *faasamoa*²⁰ and limited natural resources. The village life and land is controlled by village fono that practices the *reward collective system* rather than individual effort.

6.4.2 Villages with High Community Development

Only villages directly involved in MAFFM's extension programmes have shown significant changes in their community development activities as a consequence of higher technology adoption, accessibility to supporting services and appropriate extension approaches. Selection of Siufaga village as a pilot area has stimulated the agricultural commercialisation concept through the higher adoption of crop diversification technology. For example, taro Niue²¹ is grown commercially for both domestic and export markets despite the TLB disease. This has resulted in increased agricultural production through crop diversification and cropping pattern regardless of the farm size, coupled with the introduction of new economical crops to sustain traditional farming systems and cattle development programmes. Some Siufaga farmers have diversified to high income farming enterprises for both consumption and

²⁰ Faasamoa is a Samoan Way of Life where the barter system (exchange of food and kind) can be practised but penalise rural poor.

markets as such technology is technically, economically and environmentally sustainable in terms of soil, water and land conservation. Burrows et al (1991) recognises the importance of this traditional farming system to the economy. The contribution of producing the population's staple food requirements with little purchased inputs and modest labour inputs should never be underestimated.

Unasa's group received a loan which has accelerated the adoption of crop diversification technology as well as the introduction of cattle development programme. Group members have diversified into high-income enterprises to meet the demand of village collective system. Unasa and Nifo have diversified into profitable cattle enterprises while continuously raising domestic animals for social obligations.

The AusAID FSP's contribution is acknowledged by Retzlaff (1995) for its role in strengthening the extension service through on-farm research, quickly responding to TLB control and for policy decisions to increase cattle production. Local farmers have been convinced that it is profitable to grow taro despite TLB disease, and to adopt a crop diversification technology to ensure sustainable food production, social equity, rural poverty alleviation and reduce urban drift.

There are, however, clear indications that only farmer group members in Siufaga village have benefited from the FSP and the group's financial sustainability is questionable because of infrequent EO's visits after the bonus scheme and no further free gifts from the FSP. *Unasa's group shows remarkable improvements on farm, in transport and housing development but other groups have collapsed following the end of free gifts from the FSP and infrequent EO's visits after the bonus payment.* Money invested in the bonus scheme was found by Burrows et al (1991); Leonard and Ooi (1995) to have a negative impact on increased crop production. The most reasonable incentive is market price. Subsidies distort the price signals and farmer's decisions and create higher administration costs, dishonesty and corruption which imposes greater burden on taxpayers and rest of the society (Ott and Hartley, 1991; Silverman, 1992).

Furthermore, land ownership and fragmentation reduces the progressive farmer's enthusiasm to adopt crop diversification technology which reduces the impact of extension programmes. Leasing of village lands is extremely difficult and a very time consuming process. *As a consequence, Nifo's application for additional animals to*

²¹ Taro Niue is a susceptible variety to taro leaf blight (TLB) disease.

expand her cattle farm from MAFFM has been withdrawn. Additionally, land fragmentation has discouraged Veve from investing in a cattle farm enterprise. The customary lands constraint discourages farm investment except for farmer groups which are eligible for small group loans following the recent lending policy review. The privatisation of ASC in favour of free market competition and the increase in costs of inputs might expel smallholders from agriculture sector. Furthermore, there are concerns that this would definitely penalise low-income farmers as subsidised farm inputs are still relatively expensive. A bush knife, for example is an affordable tool for farming (Opio, 1993).

The adoption of agricultural commercialisation concept has been questionable due to insufficient market opportunities for new crops. The MAFFM and government have been criticised of not searching for prospective markets. Agricultural commercialisation is recognised by Rahman (1994) as a means of helping resolve the socio-economic issues faced in the agriculture sector. It assists in promoting agricultural production, connecting the agriculture to supporting services, educating farmers in the field of marketing and entrepreneurship and promoting the role of NGOs, farmer associations, cooperatives and private firms but is influenced by the land tenure system and the level of government incentives.

6.5. Divergence in Socio-economic Development

6.5.1 Women in low income enterprise

Rothschild advocates that the Gender Sensitive Approach empowers the productive, reproductive and community roles of women in the rural poverty alleviation process.

Weak gender analysis of agricultural production systems has penalised women leading to inequitable distribution of income, and disparity in social welfare. Women who have indirectly participated in farmer groups are characterised by low socio-economic status, invest in low-income enterprises as a consequence of their inaccessibility to supporting services. They are supported by an unreliable extension service and are required to undertake triple roles. Women's triple roles limit their full participation in extension activities. *Elenoa's productive workload increases as she joins the family group as she still has her reproductive and community roles to fulfil.*

Men undertake agricultural production and fishing while children engage in collecting edible species from lagoons. Women's work is traditionally producing woven

pandanus goods for domestic and ceremonial use (O'Meara, 1994). As a consequence, women's reproductive and community roles remain invisible through the continual engagement in low income enterprises (cooking, child care, weaving pandanus, tapa making and reef fishing) as major income sources. Little time is spent on farms which is rewarded with low farm production predominantly for home consumption. *Finau's engagement in weaving and child care has resulted in her inaccessibility to credit, lower household income and over-reliance on remittances.* Furthermore, the impact of extension programmes remain unknown as a result of low women's educational level and individualism. Women's productive role is claimed by Rothschild (1990) to be normally recognised by policy makers and project planners while reproductive and community roles are often neglected. Catherine (1996) advocates that many policy makers have failed to recognise the women's contribution because of inadequate analytical framework for integrating gender issues into project analysis but gender analysis is necessary for equal gender participation and productivity.

In Taelefaga village, involvement of the women's committee in extension programmes is constrained by individualism and their lower educational level. The field EO has been accused of not consulting with the women's committee, except for those who participate in farmer groups and youth clubs. Public extension organisations are recognised by Saito and Spurling (1992) as allocating resources to commercial farmers, mostly men as a consequence of the wrong assumption that all farmers are men. However, this is unrealistic in Taelefaga village as the number of women farmers increases. Female EOs are necessary to deal directly with women farmers needs and priorities as the present EO normally only contacts the progressive farmers who are mostly men. O'Meara (1994); Leonard and Ooi (1995) advocate that a strategy for women in agriculture is undertaken by recruiting more women for extension work and other positions in MAFFM. The recruitment of more female extension staff as Subject Matter Specialists and supervisors is recognised by Swanson et al (1990); Van Den Ban and Hawkins (1996) as a way of increasing the women participation in extension programmes. The WID approach strengthens the women's role through exchanges, interactions and negotiations coupled with the recruitment of women extension officers as supervisors (Saito and Spurling, 1992).

6.5.2 Women in high income enterprise

Integration of gender issues into extension programmes facilitates the women's full participation in democratic consultations and provides improved employment opportunities. The equality of gender participation in extension programmes has contributed significantly to community development in terms of increased farm production, household income and social welfare. The SDA women's committee (Komiti Vafealoai)²² of Siufaga village has fully participated in farm inspections and organisation of annual agricultural shows which promotes Siufaga as a progressive agricultural village. Additionally, women's involvement has been rewarded with on-farm employment opportunities and alternative income sources. Women are becoming full-time farmers and household dominant decision makers as their husbands engage in off-farm employment.

Nifo and her children have become full-time farmers while her husband and others are working in government offices. She is responsible for financial matters, participates in decision making and plays a leadership role which contributes to higher economic status and eligibility for a small group loan to establish a cattle farm.

The Gender Sensitive Approach is assessed by Rothschild (1990) and Arnold (1991) to incorporate gender issues in extension service, to reduce gender inequalities and increase the number of women beneficiaries through job creation and income generating options.

6.5.3 Sense of Empowerment, Confidence and Reliance

Introduction of the FSD approach through farmer groups has provided unique opportunities to educate rural communities on the ways of preserving traditional trees as a revival of cultural and religious values; alternative source of household cooking and fuels; and contribution to the tourism industry through a scenic landscape. The exposure of Siufaga farmers to formal and informal educational opportunities has built up their self-reliance and self confidence in the TLB control despite few having a higher education. This has reflected on the continual implementation of informal group discussions and meetings by farmers themselves with little reliance on outside assistance. The formation of farmer groups in Samalaeulu village has facilitated

²² Komiti Vafealoai is a Seventh Day Adventist Church Committee which deals with both agricultural development, church and health related activities.

community participation in extension programmes and cooperation in other community activities, and resolved the village land dispute.

Implementation of the PRA exercise in Siufaga village has established a strong relationship with other government agencies, non-government organisations, input suppliers, local entrepreneurs, funding agencies and MAFFM staff. This has enhanced the farmers accessibility to supporting agencies and improved their relationship and confidence in dealing with these agencies. The integration of social issues into extension programmes has been rewarded with higher community development. Siufaga's major household income, before the PRA exercise, was derived from wages, sales of fish and remittances. Now, farm sales have become the major income source which is used to meet social obligations, church donations, children's education and for savings. The PRA technique is found by Chambers (1994) to be increasingly used by government, NGOs and aid agencies to facilitate sustainability and empowerment, achieve more democratic decision making, maximise community involvement associated with the complementary use of scientific and indigenous knowledge to meet the needs and priorities of rural people.

Vegetable gardening in Taelefaga village has created more employment opportunities for the rural population (youths, children and women) especially school leavers, which improves their self reliance and self sufficiency. Children, Sunday School teachers and youths are self-educated through a full participation in field work activities and self-reliance in decision making. This has contributed to lower urban migration of village labour force following the natural disasters. However, the implementation of the PRA exercise to articulate community needs contributes to the people's frustration in the delayed response from the multi-disciplinary team due to a lack of coordination and communication between the MAFFM and other implementing agencies. Accordingly, there was no representative from NGOs, ASC, DBWS and poor participation of other government organisations (MIA, MWA, Education, Health Department). The sustainability of agricultural commercialisation as advocated by Rahman (1994), cannot be successful in resolving socio-economic problems without an integrated approach to development which means strong coordination and communication amongst implementing agencies.

6.6 Community Needs

Donovan (1993) advocates the community development approach as a promising strategy for integrating all components of the community with government, NGOs and funding agencies to achieve full participation and freedom of expression for community development and to meet the diversity of people's short and long term needs especially the vulnerable members of the community.

6.6.1 Community Development

There has been poor community participation in MAFFM's extension programmes as a consequence of inappropriate extension approaches, lack of accountability and integration of gender issues. There is a strong case for the use of the PRA technique through the village fono and CBOs for Samalaeulu, Malaemalu and Taelefaga village. There is the need to develop a strong relationship with other government departments namely, the MWA, MIA, Health Department and DLSE, PWD, funding agencies (DBWS), input suppliers, NGOs, farmer associations as well as MAFFM officials (Table 19). Accordingly, close consultations with these concerned authorities would develop the communities' self confidence and self consciousness as a consequence of their full participation in decision making process to resolve both the community's short and long term needs. In Samalaeulu village, the MIA representative would collaborate with the village fono through the Pulenuu to resolve the land dispute and to ensure community participation and development. The PWD officials might review the social, economic and financial sustainability of the access road scheme to cope with public criticisms about misuse of public funding as a result of inequitable distribution of benefits among communities and impassable roads. The public service was found by Rahman (1994) to be controlled by political influence and corruption which causes a lack of confidence in public officials by farmers. The provision of grants and subsidies was found by Leonard and Ooi (1995) to be unworkable and the result was mostly negative and there was no guarantee of achieving the governments economic objectives for the agriculture sector. If government wishes to achieve certain social objectives of income redistribution, this should be justified on that basis and not as a means of stimulating agricultural development. Thus, the government should ascertain the success of a small number of entrepreneurs as an engine of growth.

The extension of a piped water supply and electricity to farm lands would boost agricultural development, encourage village resettlement on productive agricultural lands, and minimise transportation problems. The CD approach, as advocated by

Swanson et al (1990), and Donovan (1993), facilitates the participation of all grassroots level institutions and encourages freedom of expression for the whole community. The “*farmer-first approach*” was found by Cernea (1991) to decentralise the decision making process and to focus on disadvantaged farmers’ concerns. Such a strategy allows field extension staff to act as facilitators between villagers and supporting agencies which prevents the governmental bureaucrats from favouritism. Jones (1986) recognises that the NGOs have recognisable relationships with international agencies as a source of funding to deal with the ethnic groups and to address gender issues and organisation of farmer groups (Cassen, 1987).

Leonard and Ooi (1995) recognise that although the MAFFM is the core government agency in the agriculture sector, there are number of areas where the responsibility must be shared with other government departments and groups outside government. These areas include meeting women’s needs (responsibility shared with MWA and women groups); meeting youth’s needs (responsibility shared with MYCS and youth clubs); sustainability of production systems and other environmental issues (responsibility shared with DLSE and various environmental groups); water management (responsibility shared with Water Authority, EPC and other watershed users); provision of credit (responsibility shared with DBWS and commercial banks); enhancing land availability for commercial agriculture (responsibility shared with Samoa Land Corporation).

Other village CBOs have expressed frustration over their lack of involvement in extension programmes and believed that the PRA technique has inflated villagers’ expectations. There has been no improvement of the service by MAFFM in terms of mobility of extension and accountability of extension staff as well as community participation. Apparently, only farmer groups, progressive farmers and youth club members have benefited. The MAFFM’s extension programmes in Siufaga village have been criticised of being targeted at progressive farmers and village elites rather than vulnerable groups. Policy makers as recognised by Burkey (1993), neglect community participation because of high administration costs and as being time consuming to organise. Field EOs for Taelefaga, Samalaeulu and Malaemalu village have been accused of focussing on farmer group members, predominantly high socio-economic status people. Future extension programmes should be channelled through the village fono to ensure community participation prior to sustainable development and rural poverty alleviation. The PRA technique was found by Chambers (1994) to improve the sustainability and empowerment of rural communities in Asian, African and Pacific Islands, however, the equitability of employment depends on who is empowered. Commonly, the beneficiaries are local male elites while women and vulnerable groups receive few benefits.

The participatory extension approach improves the accountability and output performance of field EOs as well as community participation to avoid abuses on government resources (vehicles, houses) and corruption. All extension activities could be organised by villagers themselves with little assistance from the MAFFM's staff as facilitators. Chambers (1988, 1993, 1994) recognises the success of participatory approach in organising the farmers groups in more democratic decision making arena. Farmers are key field personnel who educate themselves in implementing the extension programmes, utilising their indigenous knowledge, value, beliefs and local resources with little reliance on outside assistance. Such an multi-disciplinary, comprehensive and holistic approach definitely reduces the number of government extension staff, transport, salaries and administration costs.

Donovan (1993) advocates that the CD approach creates new community enterprise developments through equal profit distribution to guide government and private sector financial assistance and investment in disadvantaged communities in rural areas.

The establishment of village nurseries is a community investment that enhances their accessibility to an adequate supply of planting materials for increased agricultural production. Such an investment would create employment opportunities to resolve social problems, improve self reliance and self sufficiency. Apparently, the adoption of crop diversification technology by Taelefaga, Malaemalu and Samalaeulu farmers has been disappointing in terms of agricultural production, with an increase in uncultivated lands and in rural poverty as a consequence of a shortage of planting materials. Access to MAFFM's nursery at Nuu Research Station (near Apia) is difficult due to high transportation costs, except for progressive farmers.

The CD approach was found by Donovan (1993) to be a powerful mechanism for encouraging new development initiatives to improve agricultural productivity, human resource development, redistribute assets and powers within society, and facilitate the people's participation, motivation, awareness, behaviour and income through the community consultations and mobilising local resources with little outside assistance. CD is a catalyst to reduce government spending on costly subsidies.

6.6.2 Rural Infrastructure and Institutional Development

Van Den Ban and Hawkins (1996) advocate that adequate infrastructure facilitates the linkage between farmers and researchers and allows feedback to researchers and policy makers. Extension services was found by Swanson et al (1990), to be unsustainable without adequate rural infrastructure and institutional development and there is major constraint in developing countries where extension efforts are

concentrated on better-off farmers in urban areas (also cited in Hayward (1990) and Farrington, 1994).

The present extension system is limited by under-funding leading to inadequate resources as a consequence of reduced government budgetary allocations (See Section 6.2). The extension stations inevitably remain uncomfortable and unoccupied. There is a shortage of transport, a lack of incentives for staff and poor communication facilities.

Table 19 **Summary of Village Community Development Needs**

Village	Farmer Groups	Women's Committee	Youth Clubs
Siufaga	establish village nursery; channel the service through village fono and CBOs; accessibility to AHC small grant scheme & small group DBWS loans; removal of station & casual workers, promote mass media communication, on-farm research; extension of piped water supply & electricity to farm lands; abolish access road scheme.	Develop a joint programmes with MWA, NGOs rural micro-enterprise business, Health Dept health and educational programmes by recruiting female EOs; promote mass media communication	makes contact with church ministers, youths; organise training on vegetable composting; understand of seeking funding; develop demonstration plots and joint programme with MCYS, MWA, MIA .
Samalaeulu	conduct the PRA exercise to contact govt, NGOs, funding agencies, input suppliers, exporters, MAFFM staff; channel the service through village fono and CBOs; removal of station, casual worker & lease; promote mass media communication & on-farm research; establish a village nursery ; extension of piped water supply to farm lands; develop a regional commercial centers; cattle farm; abolish access road scheme	recruit female EOs to collaborate with MWA , NGOs village micro-enterprise business programmes; establish joint programmes with Health and Educational Dept village programmes; develop vegetable plot; promote mass media communication.	contact with church ministers & youths; organise training on vegetable production and composting ; establish demonstration plot; develop a coordination with MCYS, MWA, Health Dept, YMCA programmes & agencies.
Malaemalu	conduct the PRA exercise to contact other government , NGOs, funding agencies, input suppliers & small extension services; channel the service through village fono and CBOs; removal of station, casual workers & lease; promote mass media communication & on-farm research; establish a village nursery; develop regional commercial centers; abolish access road scheme; extension of piped water supply.	develop joint programme with Health Dept, MWA rural micro-enterprise business and health programmes by recruiting more female EOs; organise training on vegetable production and composting, establish vegetable plot; promote mass media communication.	contact with church ministers & youths; establish vegetable demonstration plot; develop coordination with MCYS, MWA, YMCA rural programmes, funding agencies; promote mass media communication
Taelefaga	establish contact with other government, NGOs, input suppliers, exporters & MAFFM staff through the PRA exercise; channel the service through village fono and CBOs; removal of station, casual workers & leases; promote mass media communication & on-farm research; establish a village nursery & banana farm; develop regional commercial centers.	develop joint programmes with MWA, Education, Health dept and NGOs by recruiting more female EOs. establish vegetable plot for women committee members; promote mass media communication using telephone.	contact with church ministers & youths; understand of seeking overseas funding for banana farm; establish joint programmes with MCYS and MWA; removal of field EO to resolve the corruption

Mass communication between villagers and field EOs is unsatisfactory although mass media is suggested as an extension method rather than expensive individual and group methods. The TV, radio and telephone are considerable options as TV sets and radio are owned by most farmers and public telephones are available to rural villagers. Rogers (1996); Swanson et al (1990); Van Den Ban and Hawkins (1996) found that mass media methods are more cost effective methods than group and individual visits. They are useful to inform the public, stimulate discussions, change behaviour and transfer knowledge although they provide little feedback.

Evidently the inaccessibility to supporting services is a growing problem in MAFFM's extension programmes. Technology adoption by smallholders in Samalaeulu, Malaemalu and Taelefaga has declined due to high transportation costs. Technologies as evidenced by Hayward (1990), cannot be workable without farm inputs, credit, storage and marketing. Centralisation of supporting services (ASC, DBWS and others) has limited the impact of extension programmes in terms of community participation and agricultural development. Decentralisation of supporting services is demanded by rural communities to boost agricultural development and promote community development. Rahman (1994) recognises that agricultural commercialisation can be sustainable if there is an integrated, multi-disciplinary and holistic approach, comprehensive national commercialisation policy, existent institutional linkages and networkings, and better coordination among the implementing agencies.

6.7 Conclusion

The Samoan Government, like many other countries, has learned lessons from its past experiences with the fully funded MAFFM's extension service over the last three decades. MAFFM, as the major technology transfer provider to farmers, and coupled with price stabilisation schemes (bonus scheme) and subsidies imposes financial pressure upon the public budget. These services have also tended to make farmers over-reliant on government assistance rather than becoming self-reliance and self-sufficient. Such a government strategy for the agricultural sector has inevitably inhibited the private sector's role and also the role of NGOs, farmer associations and cooperatives in economic development (Leonard and Ooi; Burrows et al; Rahman).

Furthermore, these “*top-down*” extension systems have not improved the rural community development in terms of increased agricultural production, household income and social welfare. The “*top-down*” extension systems have been based upon unrealistic assumptions of socio-economic situation, farmer participation, quality and quantity of extension staff. There is also limited supporting services, and little integration of social issues with the extension service leading to poor farmer participation in the democratic decision making arena (Ameur, 1994; Swanson et al, 1990; Van Den Ban and Hawkins, 1996).

Many countries have found that their “*top-down*” extension systems are too costly to be sustainable, they demand more financial support and they fail to consult with poor target beneficiaries. Thus these countries have adopted the “*bottom-up*” extension systems which incorporate socio-economic issues in agricultural extension programmes. The benefits of the “*bottom-up*” approach are improved social welfare and equitable income redistribution among rural communities (Ameur, 1994; Anothlt, 1994; Farrington, 1994).

The “*bottom-up*” extension systems, for example the FSD approach adopting the RRA/PRA techniques, are now being prioritised by the government to improve MAFFM’s extension service to farmers. The main goal is to promote village community development in terms of agricultural development, household income and social welfare. The FSD approach has been successful in establishing farmer groups and coordinating all community components in democratic consultations with officials from other government agencies, NGOs and MAFFM. Leonard and Ooi (1995) recognise that although farmers and policy makers fully participate in democratic decision making, these systems still demand financial support from the government and donor agencies which contribute to the budget deficit and to accumulated foreign debts.

Despite all these past extension efforts they have made limited significant impact on rural life and there is limited financial sustainability beyond the project life (Lubett, 1997). The MAFFM’s extension service has been ineffective and has not considered social issues, had little community consultations, been subject to political influence and also to corruption. Technology transfer is normally targeted at progressive farmers rather than the majority of low socio-economic communities due to an unrealistic assumption that progressive farmers would share technology with their

subsistence counterparts. This assumption is questionable (Roling, 1988; Swanson et al, 1990; Van Den Ban and Hawkins, 1996; Hayward, 1990).

Importantly, government investment on the MAFFM's extension service has significantly been reduced as a consequence of new economic policies under the current public sector reform (GWS, 1995). The adoption of modern technology and concept of agricultural commercialisation has been unsuccessful due to several factors - village people's educational level, access to communication, religion, culture, economic status, land tenure, geographical difference, and the Samoan collective system plus the farmers differential accessibility to complementary supporting services.

The Participatory Learning Action (PLA) method does not seemingly provide any indication of improving full community participation in extension programmes due to poor participation of other components of the community. In addition, the FSD approach adopting the PRA techniques has not inevitably been successful due to a lack of coordination and communication between the MAFFM and other implementing agencies. MAFFM's extension programmes have thus partially benefited the village community, particularly those who directly participate in farmer groups and youth clubs.

This study shows that the Community Development (CD) approach using the PRA technique is a very appropriate system to improve the MAFFM's extension service to meet the complexity and diversity of farmers' short and long term needs. The CD approach coordinates all components of the community (eg. women, youth, children, formal and informal groups) with government and non-government organisations and funding agencies in a democratic consultations and dialogue to ensure the whole community participation prior to the sustainable development. Furthermore, this approach is helpful in resolving the problems and constraints encountered in adopting modern technology and integrating factors such as land rights, cultural and social issues and inaccessibility to supporting services. For example, the availability of credit to purchase farm inputs, and improved rural infrastructure (roads, telecommunication, etc) to access to urban markets.

There is a possibility for private sector to deal with the few commercial farmers, while the role of NGOs, farmers associations and cooperatives is promoted, consistent

with new economic policy reform. This would definitely promote the leading role of private sector in sustainable economic growth and release some services and functions that are presently undertaken by the government, but which could be performed effectively by the private sector. As a consequence government spending on MAFFM operating expenditures would be reduced as has occurred in other countries (Ameur; Antholt; Umali and Schwartz) and as suggested by local policy makers and consultants (Burrows et al, 1991; Leonard and Ooi, 1995; Lubett, 1997). There are public concerns about the serious social consequences of private extension service, abolition of price supporting scheme and the privatisation of the ASC. There is, however, no other option for government if it opts to improve the MAFFM's extension service to farmers in a way which is consistent with the new economic policy framework.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATIONS

7.1 Introduction

This chapter outlines the recommendations to achieve increases in villagers' socio-economic status through a more effective extension service. Findings from this study support the community development (CD) approach initiated by the AusAID FSP recently. An extension system is not sustainable without complementary supporting services, farmer participation, and a good national extension policy focussing on clients that are to be served, organisational placement, funding arrangement; and integration of social issues as extension has a diversity of clients who have different needs and priorities (Swanson et al, 1990; Van Den Ban and Hawkins, 1996). Ineffective extension systems adopted over the last decades are characterised as being over-ambitious schemes, high recurrent expenditure and limited community development (Cummings Jr, 1990; Contado, 1990; Tacconi & Tisdell, 1992; Cernea, 1991; Antholt (1994); Chambers, 1994). The adoption of participatory farmer approaches by developing countries is considered to be the way by which major extension systems can serve their diversity of client needs and fulfil an important role in the community.

In the Samoan context, however, social collective systems, land tenure, limited market development and opportunities, restricted access to centralised supporting services and an unreliable extension service demand an integrated approach to attain the whole community development (O'Meara, 1994; Leonard and Ooi, 1995; Lubett, 1997). The CD approach is recognised by Donovan (1993) as a mechanism to achieve community development through a multi-disciplinary, comprehensive and holistic approach involving community participation, incorporation of indigenous and scientific knowledge systems, enhancement of self-reliance, self-sustainability and self sufficiency through new community investment. Success of the community development will result in less government intervention and expenditure.

In other developing countries, the full participation of government, non-government organisations, aid agencies in association with local communities through a series of democratic consultations and negotiations is recognised by Chambers (1993) to facilitate the interdisciplinary approach and to determine the diversity of clients' needs and priorities. Farmers become key field personnel and gain self-reliance,

become self-educated and achieve higher community participation while government extension staff are acting as facilitators and catalysts. The NGOs have a sound reputation for working with international and bilateral agencies to organise people into structures for group action, particularly through grassroots organisations (Cernea, 1988; Cassen, 1987; Kulawart, 1998).

To incorporate an integrated approach, and avoid the over-ambitious tendency of price support schemes, where the community participation in previous MAFFM's extension programmes and financial relief are questionable (Burrows et al, 1991; O'Meara, 1994; Leonard and Ooi, 1995; Lubett, 1997), demands an alternative extension system. The promotion of the private sector role, non-government organisations, farmer associations and cooperatives is recommended. Importantly, the private sector involvement is essential to abolish government incentives and subsidies and to develop a competitive, reliable extension service (Ott and Hartley, 1991, Milligan, 1996; Ameer, 1994). The thrust of this package is to provide a system of improving socio-economic development and future government policy for the agriculture sector. The following recommendations draw from global experiences of extension systems while incorporating the findings of this study.

7.2 Community Participation Strategies

In compliance with community development needs and economic strategy of improving the rural standard of living, this study supports the community development approach using the PRA techniques to coordinate all components of the community (e.g. women, youths, village fono) with other government agencies, non-government organisations, funding agencies, input suppliers and MAFFM officials in democratic consultations and dialogues. Full participation of different key players would contribute to employment creation and establishment of economic/positive activities which lead to self-sufficiency, self-reliance and empowerment (Casley and Kumar, 1988; Chambers, 1994; FAO, 1995).

The multi-disciplinary team for the PRA exercise must share the responsibility of extension with the MAFFM's Subject Matter Specialists (SMSs), meeting women's needs (responsibility shared with MWA, Health Dept, Women in Business, National Women Council of Samoa and women committees); meeting youth's needs (responsibility shared with MYCS, YMCA and youth clubs); sustainability of

production systems and environmental issues (responsibility shared with DLSE and various environmental groups; extension of piped water supply, access road and electricity (responsibility shared with Water Authority, EPC and PWD); provision of credit (responsibility shared with DBWS and commercial banks). The PRA team must avoid creating high expectation amongst the villagers (responsibility shared with MIA, Pulenuu and REOs (See Figure 8)).

Before the PRA exercise, the Regional Extension Officer (REO), Pulenuu and MIA representative should negotiate with village council (fono) to avoid “*faasamoa*”²³, the barter system (no food/cash exchange) and there should only be a kava ceremony. The PRA exercise should be undertaken once within 3 - 4 days, any further enquiry would be resolved by REO and discipline concerned. All extension programmes should be channelled through the village fono in association with the Village Development Committee, chaired by the Pulenuu, to ensure the participation of various community based organisations. The Village Development Committee should consist of community change agents representing various CBOs. It is important that there is:

- Identification of rural community organisation and farming household goals to be achieved.
- Identification of community resources, for example access to credit, input and output markets, labour, land use and tenure system, village social structure, etc.
- Identification of existing constraints to increasing household agricultural production and possible household community solutions.

For example, farmers should concentrate on growing short term crops that are less prone to natural disasters and that climatically suited to a particular area. Use the cheap viable control measures such as biological control for crop pests/diseases, and sustainable farming methods, including composting, mulching, alley cropping, crop rotation, use of legumes to counter expensive farm inputs.

- Identification of community change agents representing various village community based organisations to collaborate with REOs.

To ensure the sustainability of farmer groups and a full community involvement in future extension programmes, these factors must be taken into consideration:

- Development of Group Oriented Strategies. Selection of group members are exact social pressure for or against change; group acts against any individual change; and decision made as a result of group change are vulnerable; if there is a need for

change that changes would improve their lives; changes to the village setting regarding its norms and values is a continuous process. In fact, farmer groups are formed and dissolved, leadership changes power and influence shifts, standard of behaviour are modified as in the roles of men, women and children.

- Increased understanding of changes that are produced internally including people, conflicts, changes in leadership, innovation, crisis and natural disasters, as well as externally generated changes that are brought by communication, extension agents, education, transportation.

7.3 Strategies for Community Agricultural Training:

The training needs assessment (TNA) of both extension agents and target groups in their respective environments should be undertaken. The TNA will identify what kind of training is needed, and who needs training, for an effective and efficient performance by the community change agents.

Training farm household members and other village target group members through the group method approach is cheaper and members should regroup according to economic differences and possibly specific interests. Adoption rate increases with exposure to a variety of teaching methods (Swanson et al, 1990; Van Den Ban and Hawkins, 1996).

Village nurseries and demonstration plots as part of on-farm research should be established and monitored by REOs and rural communities.

Such community enterprise developments would contribute to employment creation, mobilisation of local resources and reduce reliance on outside assistance, and assist with equitable income distribution (Donovan, 1993; FAO, 1995; Chambers, 1994, Robson, 1994)

The evaluation of REOs and farmer responses to the effectiveness of extension programmes should be undertaken by the village development committee, rural communities and PRA team representatives to assess behaviour changes or increased production of evaluated programme.

Such strategies maintain village cultural values and beliefs; increase people's motivation for achievement through the improvement of farming skills, aspirations,

²³ Faasamoa is the Samoan Way of Life (collective system) which deals with the exchange of food and

adequate financial incentives, sufficient farm inputs; change incentives to agricultural development to improve extension services, self reliance and self sufficiency. Field extension officers are encouraged to develop a broader participation of rural population in their rural development efforts, to assess the sustainability of farmer groups. Most farmers participate as actual benefits are directly tied to participation but others participate and remain involved if direct and immediate benefits are material things (O'Meara, 1994). Avoid targeting only a small group of progressive farmers in the expectation that this would ultimately lead to broader participation. Specific target groups should include youth clubs, women's committees and farmer groups who improve economic life of the community (Leonard and Ooi, 1995; Lubett, 1997).

Mass media communication should be promoted by disseminating the information through television and radio programmes. Villages should be encouraged to use public telephone or cellular phones to contact their REOs. This would avoid the abuse of government vehicles and reduce the recurrent costs on fuel but improve the mobility of service. In addition, this would facilitate the better planning, communication and coordination of extension programmes which lead to "*demand-driven*" extension system (Swanson et al, 1990; FAO, 1990; Cummings Jr, 1990; Hayward, 1990).

7.4 Strategies for Enhancing Women's Participation

- Recruitment of Women Extension Workers:

More women extension officers should be recruited and trained as Subject Matter Specialists or supervisors and stationed in regional offices to work with community women group motivators. These positions should be advertised specifically for women applicants. For other positions within the MAFFM, these should be advertised in a manner to attract both women and men applicants.

- Women Group Motivators:

Village women group motivators should be nominated by the group to act as village contacts for regional extension staff. The motivators would be the channel for information dissemination to other group members about the agricultural development

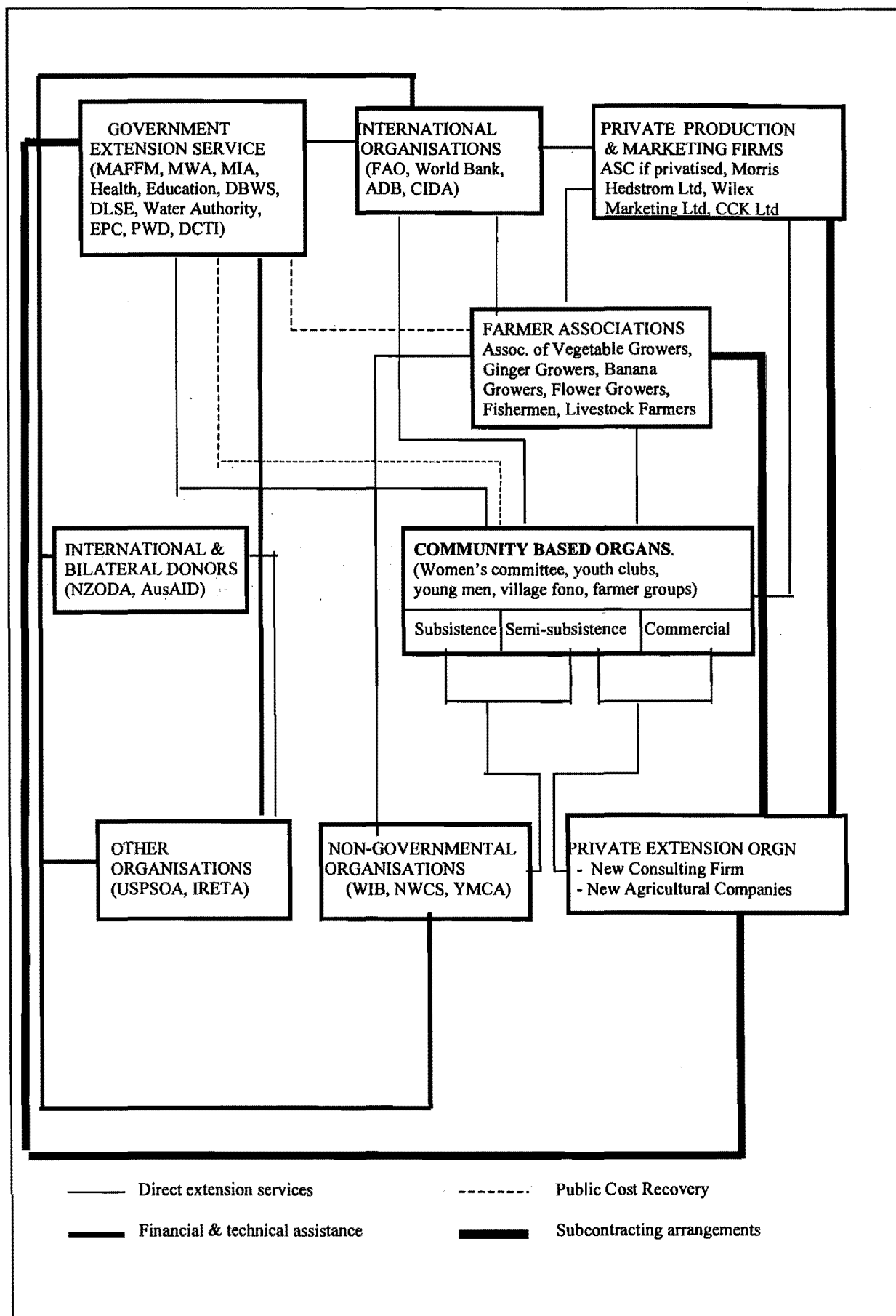
activities such as vegetable gardening, cut-flower production, kava growing and processing, village processing of taro and banana chips, production of pandanus and mulberry material for weaving and tapa cloth making. Women group motivators should attend the MAFFM's training courses on specific topics (including training on their roles) as well as the course for women in agriculture that is offered at USP, School of Agriculture, Alafua.

A gender training programme should be developed and implemented for male extension officers to assist them to work more effectively with women groups. The village women's committee must assist regional extension officers with their community work.

Extension materials depicting women or gendered agricultural activities need to be developed. A schedule of the extension officer's visits should be developed for distribution to women group motivators. A training/information source in regional centres, and information such as videos, pamphlets of various agricultural activities in areas such as budgeting, harvesting, processing and marketing should be made available. Village based workshops, seminars, meetings and demonstration plots for women's groups should be provided by women extension officers, MWA, Health and Education Department staff to train women in the skills of farm business management, micro-enterprise business and family health.

Monitoring and Evaluation of Women in Agriculture should be the responsibility of the Economic Analysis and Planning Unit (EAPU) of the MAFFM, Ministry of Women Affairs and NGOs (WIB, NWCS). A Community Awareness Campaign should be designed and launched on the importance of women in agriculture and their vital roles. Small agricultural shows should be organised in village, district or regional level in which women display and sell their produce to boost the tourism industry. It is important that the community witness that agriculture is an income-earning form of employment for both women and men.

Figure 8: Modified Agricultural Extension Systems for Samoan Farmers



7.5 Strategies for Marketing and Market Development

If commercial agriculture is to be successful in Samoa, the private sector should play a key role in identifying and meeting both the domestic and international markets' needs. A strong linkage between MAFFM, DCTI and local entrepreneurs should be developed through better communication and coordination to ensure that on-farm production decisions are market-led. An increased proportion of government assistance for market development and promotion should be directed to private sector rather than directed to government agencies. This study supports the view that the ASC should not compete with private sector in both production and marketing of agricultural products. To be consistent with government market liberalisation policy, the ASC should be privatised.

To assist farmers through the provision of improved market information, the Market Information Unit (MIU) within DCTI and a Crop Marketing Advisory Service (CMAS) within EAPU should perform the following tasks effectively:

- Identification of constraints to domestic/overseas marketing of agricultural produce.
- Provision of weekly prices of selected commodities in local/overseas markets to farmers.
- Provision of daily/weekly information on the local market supply situation of farm produce.
- Identification of potential markets for fresh and processed produce
- Establishment of quality management systems for potential export crops to ensure quality.

This information should be disseminated through daily market reports, weekly radio programmes, newspaper, telephone and through regional offices. Representatives from the DTCI, EAPU and private sector should conduct regular village marketing workshops in association with the REOs.

7.6 Rural Infrastructure and Institutional Development

The adoption of agricultural commercialisation, especially by low income farmers, has been declining as a result of inaccessibility to centralised supporting services (ASC, DBWS, and urban markets). Transportation costs are high which reduces the

impact of extension programmes despite the new tarsealed road. These services should be decentralised through development of regional commercial centers to improve the MAFFM's extension service.

Access to productive agricultural lands is limited due to impassable roads which is a consequence of new access road scheme. As a short term strategy, access road maintenance should be tendered, rather than through inequitable distribution of money among rural communities, which in turn affects agricultural development. For a long term strategy, tarsealed access roads, electricity and extension of piped water supply to farm lands would lead to new village resettlement, increased agricultural production, and a better transportation system for middlemen and other commercialised government services.

7.7 Institutional Strengthening

This study highlights villagers' criticisms, consultants' findings and policy makers concerns about the fragmented and ineffective MAFFM extension service which has little impact on rural life. The critics maintain that MAFFM wastes limited government budgetary resources on vacant extension stations, casual workers and land leases and there is abuse of government vehicles. District extension stations are no longer acceptable for extension activities and on-farm research is favoured over on-station demonstration following the prioritisation by the FSD approach.

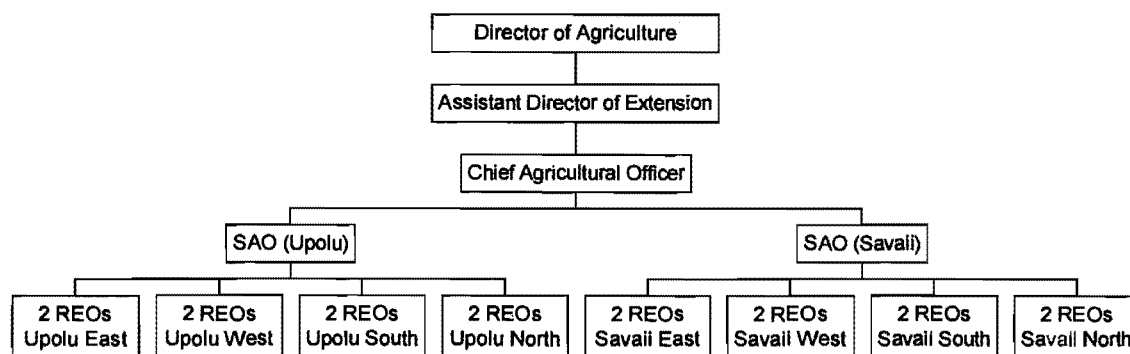
As a long term strategy, replace the vacant, uncomfortable district extension stations with regional offices within 5 - 10 years, leading to the removal of land leases and casual workers and lowering the number of staff. As a short term strategy, there should be budget cuts on house maintenance, casual workers and land leases. More funding should be allocated to strengthen the Research Division and others. Furthermore, to be consistent with the public sector reform and the new budget system, the MAFFM's extension service should be restructured to ensure the efficient allocation and utilisation of limited budgetary resources. The following structure is recommended:

Eight regional extension offices should be established and staffed by 16 extension officers (8 males, 8 females). In each island, 4 regional extension offices should be constructed and staffed by 8 REOs. Each office should be well equipped with

facilities that include a communication system (telephone, radio, TV and video), suitable transport (2 vehicles) and staffed by two well qualified extension staff (1 male, 1 female) with minimum qualification of a Diploma in Agriculture (DTA). This would resolve the current shortage of field extension staff and vehicles due to insufficient budgetary allocations for operating expenditure. The office secretary should be employed as receptionist to facilitate the technology transfer through mass media communication (telephone, fax, written information). Extension services would be provided when demanded by rural communities or group of farmers.

Development of the Staff Incentive Package including higher salary, living allowance and promotion. Starting salary for diplomats and degree holders should be WS\$7,500 and WS\$10,000 per annum respectively plus living allowance of WS\$1000 per annum. Any promotion should be based on staff performance which should improve their accountability and credibility and provide a more effective service (Swanson et al, 1990; Schwartz, 1994; Milligan, 1996).

Figure 9: Proposed Organisational Structure of the MAFFM's Agricultural Extension Division



SAO : Senior Agricultural Officer

REO: Regional Extension Officer

Small extension services provided by other divisions of MAFFM should be amalgamated with the Extension Division to ensure the most effective service. Pooling of resources would strengthen the MAFFM's extension service which allow sufficient funding to strengthen the research capability in terms of institutional and human resource development. Existing extension staff employed by small services must be trained as Subject Matter Specialists in order to concentrate on research. Thus an effective extension service will be provided in association with REOs as demanded by rural communities "demand-driven" extension service. This strategy would

resolve the continual abuse of government resources, improve human resource development and relieve the financial crisis. Real benefits would arise from the merger and the services would be integrated to facilitate the coordination and cooperation with other government and non-government organisations, funding agencies, input suppliers and rural communities. Some restructuring of staff would inevitably take place with the merger. This would also avoid the higher recurrent costs demand, duplication of services, employment of unproductive staff through improved future planning, communication and coordination in the extension service.

Monitoring and Evaluation: The REO's output performance and accountability should be carried out by senior extension staff for each island and community concerned on a regular basis. The quarterly evaluation should be undertaken by the EAPU staff.

7.8 Government Incentives and Subsidies

This study supports the view that the ASC has competed unfairly with the private sector and impeded the private sector's contribution to national economic development (Burrows et al, 1991; Leonard and Ooi, 1995). Such government intervention suppresses economic growth and creates additional obstacles to market liberation and deregulation (Silverman, 1990; Ott and Hartley, 1991). The ASC's monopoly has aggravated the budget deficit and penalised the taxpayers. Thus, the ASC should be privatised to allow the free market competition despite the concerns about the increased production costs. In fact, small group loans are available from the DBWS following the recent lending policy review and that would encourage rural farmers to participate in extension programmes through farmer groups and village community-based organisations.

With regard to mounting public criticisms and policy makers accusations about the price supporting schemes (new access road, bonus) that lead to inequitable distributive effects. This study supports the view (Silverman, 1993; Swanson et al, 1990) that the government incentives benefit the high economic status people, distort farmers decisions and lead to corruption while their abandonment is unlikely to affect agricultural output seriously. The bonus scheme, however, is a necessary option for farmers, especially during the period of natural disasters, to have access to lower priced inputs in order to boost export crop production. The scheme adversely affects

sustainable economic growth in terms of the public's over-reliance on government financial support. Bonus payments should therefore be based on output rather than input to avoid the earlier collapse of farmer groups and negligence of plants after payment.

The new access road scheme should be abolished. Alternatively, the PWD machines should either be used or road maintenance should be tendered so local and foreign private contractors will compete. The access road is a public good which is unprofitable for the private sector because of its low excludability "free-rider" problem (Swanson et al, 1990; Umali and Schwartz, 1994; Farrington, 1994). The government should therefore concentrate on policy making, human resource development and provision of appropriate infrastructure. Improved rural infrastructure (roads) facilitates the information dissemination and technology transfer to poor farmers in rural areas.

7.9 Some Possible Alternative Extension Systems

To be consistent with new economic policies on the promotion of agricultural commercialisation and partnership with the private sector, Public Cost Recovery System as practised in Chile and Norway (See Section 3.8.1) should be initiated through CBOs and progressive (commercial) farmers leading to 50:50 cost sharing arrangement. The government might pay staff salaries with the remainder funded by farmer membership fees.

Sharecropping or joint venture as experienced by farmers in Educator (See Section 3.8.1) is another option where the production and transportation costs can be shared. These joint ventures would serve as demonstration plots and farmers would have access to both inputs and better information.

The MAFFM extension service should be subcontracted to private sector (private extension organisations, farmer associations, private production & marketing firms) as practised in Zimbabwe and Chile (See Section 3.7), to provide the service with a small degree of cost-sharing between government and farmer beneficiaries (Figure 8).

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**Appendix 1: Calendar of Research Activities, Location and Representatives of Organisation
Interviewed in Samoa, from the period 1st July -9th August 1997**

Month	Week	Location and Events of Research
July	Week 1 (01 - 03/07/97)	<u>Apia, Upolu Island</u> , appointments and interviews with representatives of government, non-government organizations, MAFFM and USP library research, attended extension staff meeting
	(04 - 05/07/97)	<u>Preliminary Village Visits</u> , meet key informants & leaders (matai, pulenuu, women's committee, school teachers, shop keepers, pastors) and build up rapport
July	Week 2	<u>Salelologa, Savaii Island</u> , attended extension staff meeting and training on composts, conducted by FSP Extension Consultant, Japanese Volunteer & local research counterpart
Monday-Wednesday		<u>Sapapalii CCC's Youth Club</u> , observed compost demonstration for vegetable garden, interviewed Youth Club members and EO, visited Siufaga village
(07 - 09/07/97)		<u>Siufaga village</u> , attended village fono (meeting), interviewed FSP clients, women's committee, youth clubs, young men and women, school teachers, church ministers, school children & youth clubs
		<u>Resided in the village</u> , conducted household and individual interviews, visiting farms and access road, direct observation of village situation, learning farming techniques,
		<u>Samalaculu village</u> , attended village fono (meeting), interviewed 2 farmer group members, women's committee members, church ministers, young women and men, school children
Thursday-Saturday		<u>Resided in the village</u> , conducted household and individual interviews, visiting farms and access road, direct observation of village situation, learning farming techniques
(10 - 12/07/97)		<u>Salelologa town</u> , interviewed DBWS loan officers, conducted market survey
July	Week 3	<u>Apia, Upolu Island</u> , attend extension staff meeting and training
Monday-Wednesday		<u>Malaemalu village</u> , attended village fono (meeting), interviewed CBOs (church youth clubs, women's committee, farmer groups, young men and women, school children
(14 - 16/07/97)		<u>Resided in the village</u> , conducted household and individual interviews, visiting farms and access road, direct observations of village situation, learning farming techniques
		<u>Taelefaga village</u> , attended village fono (meeting), interviewed CBOs (farmer groups, youth clubs, women's committee, young men and women, school children, pastors
Thursady-Saturday		<u>Resided in the village</u> , conducted household and individual interviews, visiting farms and access road, direct observations of village situation
(17 - 19/07/97)		
July	Week 4	<u>Second Round of Village Visits and Interviews on Savaii Island</u> , interviews with CBOs and direct observations.
Monday - Friday		<u>Second Round of Village Visits and Interviews on Upolu Island</u> , interviews with CBOs and direct observations.
(21 - 25/07/97)		
August	Week 5	<u>Apia town</u> , interviews with representatives of Wilex and CCK, Women in Business, Flower, Ginger and Fishermen Association, WSVB, MAFFM staff
(28 - 01/08/97)		
August	Week 6	<u>Apia town</u> , compilation of results and analysis, one day workshop to discuss some arising issues and suggestions.
(04 - 08/08/97)		

People Consulted in New Zealand

John Greer, Private Consultant - Agriculture New Zealand Ltd, Christchurch

T.M.S. Cunliffe, Consultant (former Director of MAFFM) - Lincoln International Ltd

Dr.G. A. Frengley, Senior Lecturer (Part-time Private Consultant) - Lincoln University

Samoan Community - Christchurch and Auckland

People Consulted in Samoa

Government Departments and Organisations:

Treasury Department

Ms Frances Brebner, AusAID Development Officer

Mrs Margret Soon, Senior Finance Officer

Ministry of Agriculture, Forests, Fisheries and Meteorology (MAFFM)

Mr Tuisugaletaua Sofara Aveau, Director

Mr Seve Imo, Assistant Director of Research, Quarantine and Extension

Mr Asuao Malaki, Assistant Director of Forestry

Mr Tiatia Faleupolu, Assistant Director of Livestock

Dr Semisi Toa Semisi, Former Assistant Director of Research

Mr Nemaia Tekiu, Chief Crops Officer

Mr Paul Tomane, Farming Systems Officer

Mr Apulu Metai, Chief Agricultural Officer

Mr Mike King, Fishery, Extension and Training Project Team Leader

Mrs Temukisa Rimoni, Assistant Director of Finance

Mr Opetai Liu, Senior Information Officer

Mr Leuta Saifoloi, District Field Officer for Taelefaga Village

Mr Pine Paenao, District Field Officer for Malaemalu Village

Mr Pule Elia, District Field Assistant for Samalaeulu Village

Mrs Fagaloa Taulote, District Field Officer for Siufaga Village

Public Service Commission

Ms Penny Alama, Assistant Director of Human Resource Development

Ministry of Women Affairs

Mrs Foisaga Etuati Shon, Secretary

Ministry of Internal Affairs

Mr Savea Fomai Sapolu, Secretary

Agriculture Store Corporation

Mr Afa Papaalii, Acting General Manager

Development Bank of Western Samoa (DBWS)

Mr Aukusotino Rasmussen, Manager of Research and Policy

Western Samoa Visitors Bureau

Mr Faamoe Uti Wood, Manager of Industrial and Tourism Development

Non Government Organisations:**YMCA**

Mr Paul Davis, General Secretary

Women in Business

Mrs Eletino Meredith, President

Farmers' Associations

Mr Steve Hazelman, President of Vegetable Grower Association

Mr Sekoa Ah Boon, President of Ginger Association

Mr Talitiga Taliaoa, President of Fishermen Association

International Donor Agencies

Mr Peter Wood, FSP Team Leader

Private Sector (firms/exporters)

Mr Eddie Wilson, General Manager of Willex Company

Mr Ken Newton, General Manager of CCK Ltd

Mr Aukusotino John, Manager of Morris Hedstrom Ltd

Village Case Studies:

Siufaga and Samalaeulu village on Savaii Island

Malaemalu and Taelefaga village on Upolu Island

Matai, women's committee, school children, young men, pastors, school teachers, shop keepers and farmer groups, O youth clubs and other informal groups

Appendix 2: Semi-structured Questionnaire (Checklist) for Policy makers Interviews and Village Case Studies

Checklist for Policy Makers Interviews

1. What do you think about the new economic policies?
2. Why does the government introduce these policies?
3. How are they being implemented?
4. What are the real policy impact on agricultural sector and national economy?
5. How would the government help the rural poor?
6. Should the ASC be privatized?
7. Is necessary to eliminate the agricultural subsidies and bonus? why?
8. How do these policies affect the function of MAFFM and Extension Division?
9. What is your future plan for MAFFM's Extension Service?
10. Should the MAFFM's extension service be restructured?
11. Why should/should not it be restructured?
12. Which part of service should be restructured?
13. What are the alternative extension systems for farmers?
14. How is the role of farmer's associations/mass media?
15. What about the role of NGOs/CBOs/private firms?
16. Is it a good policy to charge farmers?
17. Who should pay for the service?
18. What is the impact of these policies on rural life?

Semi-structured Questionnaire for Village Case Study

1. Background biophysical data - village profile

Village Name

Population

Social Services:

housing type/number; village health clinic or hospital; schools;

tradesore; water supply; roading system; electricity, telephone, radio.

Village Based Organisations:

women's committee, youth clubs, village fono, pastor's school, farmer groups

2. Household

Name, age

Martial status/matai title/taulealea

Number of people in households

Educational levels, skills training

Training in Agriculture

The Farmer's Homestead

Housing type - traditional/wood and iron, masonry

Means of lighting - kerosene lamp, electricity

Forms of cooking - wood, electric cooker, gas cooker

Kitchen - within house or separate, refrigerator

Toilet - flush, water -seal, pit latrine, nothing

Communication - radio, video/TV

The Farming System:

farm size (number of holdings, cultivated, fallow land);

crops grown and management systems used (yields, rotations used, cropping system);

level of productivity, which crops are important or grow for sale?

livestock types and management systems used (fencing/free range);

Are changes in agricultural activity in recent times, why?;

Problems with growing crops (pests/diseases) Are yields lower/higher now than they were 10 years ago, why?;

Labour inputs, marketing activities, prices received for produce sold, transport costs; do they get credit where from?

Land Resource Information:

land use and ownership (customary/freehold/leasehold), soil type, climatic factors

Income/Occupation/expenditure data

(i) Approx. household cash income has received from:

Resource based sources:

sale of crops/livestock (indicate which);

sale from any other (e.g. fish, handicrafts);

Non-farm resource uses:

wages from a job (s);

wages from family members' jobs;

remittances from family member (s);

earning from trading; gifts, winnings, etc;

(ii) Annual expenditure - can you estimate how much you have spent on:

school fees, other educational costs; support for children at school;
 furniture, machinery, car, truck, motorbike, etc; travel to distant places;
 clothes for yourself and family;
 fertilizer, herbicides, tools, knives, etc;
 support for family away from home (not at school);
 other big expenses (faalavelave), church donations;

(iii) Weekly expenditure - how much have you spent on:

rice, biscuit, bread, sugar, etc;
 canned/fresh fish, meat;
 other local food; tobacco, beer, etc;
 any big expenses during the last week;
 other small expenses

(iv) Inputs and costs:

what types and costs spent on:
 input types and costs for farm operation (clearing, planting, fertilizing,
 weeding, harvesting);
 labour (number and costs);
 how much time spent on:
 hunting, fishing, gathering wood and produce;
 marketing;
 other business activity; social, church, community activities;
 domestic work; leisure.

(v) Agricultural and other activities of women, and other NGOs in the village,
 roles, active or not:

What are their major concerns of women in their everyday life, priorities;

Farm decision-makers and time spent:

hired labour (how much), family labour (meal or cash),

What produce has been sold last week? Price/ frequency of sale in the season

Capital and Financial Inputs Used for Production and Marketing Arrangements

How much fertilisers, herbicide, etc, have you purchased and used? At what cost?;

What seed, tools and equipment have you bought? At what cost?;

What livestock, if any, have you bought? At what cost?;

Have any fencing materials been bought? At what costs?;

What land rent if any, have you had to pay?;

What church or social contributions have you had to pay?;

What taxes, insurance contributions, etc have you pay?;

What part of the produce is marketed, how does it reach the market?

taken by yourself or family member;

taken to market jointly with crops of others;

taken by own transport, bus, taxi or hire truck;

bought or collected from the farm or at the road by middleman, dealer;

is this same for all marketed crops;

Can you estimate your marketing costs per week, per month or per year?

Do you have any regular arrangements with a particular company or middlemen?

Farm Income (refer to the above-mentioned figures except progressive farmers who have good business sense)

(B) People's Perceptions of the MAFFM' extension service

Impact of extension service on agricultural production, source of income, standard of living, savings:

group formation and support;

farmer training, market information, farm management;

farmer participation, new enterprises.

Factors influencing the Adoption of Technology:

credit, transportation, socio-economic level, rural infrastructure,

market availability, land tenure, access road, input services.

Village people's advice on certain issues such as new prioritised farm enterprises, types of assistance, mass media, farmer associations, CBOs, types of service by government and private sector, government subsidies and bonus scheme.

Village people's views on ways to improve the MAFFM's extension services to meet their needs and priorities while reducing the government spending.

Appendix 3: Village Development

Table 1 Village Profile - population, households, social services, MAFFM's programmes,

Village	Population	No. Household	Community Services	MAFFM's programmes	Village CBOs
Siufaga	786 (454 male, 332 female)	73	1 primary school , 1 church college, women's committee house, private health clinic, 1 hospital, public telephone, 2 stores, piped water supply, tarsealed road, access road, electricity, 3 churches	T & V system, Bonus Scheme, FSD approach using the PRA technique through Farming Systems Project, Livestock Development Programmes	5 farmer groups consist of men and women had been formed but only 2 groups survive and number of members reduced from 20 to 10.
Samalaeculu	less than 500	58	1 primary school, 2 churches, women's committee house, pulic telephone, 2 stores, piped and tank water supply, electricity, tarsealed road, access road	Bonus Scheme, T & V System, Participatory Learning Action (PLA) technique through Community based Organisations (CBOs)	2 new farmer groups consist of 12 members each (25% are women) have been established. Other CBOs willing to participate.
Malaemalu	416 (206 male, 210 female)	52	1 primary school, 2 stores, piped and tank water supply, electricity, women committee house, public telephone, 2 churches, tarsealed road, access road	Bonus Scheme, Participatory Learning Action (PLA) technique through Community Based Organisations (CBOs)	Methodist youth clubs consists of 30 members (20 men, 10 women) operate a vegetable demonstration plot
Taelefaga	342 (132 male, 210 female)	22	1 primary school, 2 stores, 2 churches, piped and tank water supply, unsealed road, no access road, electricity	Bonus Scheme, Participatory Learning Actions (PLA) technique through Community Based Organisations (CBOs)	2 church youth clubs, formed but now only one exists, 1 family group operate vegetable garden

Appendix 3:

Table 2 Biophysical data of individual farmers of 4 villages - education, work experience, agricultural training, business

Village	Name	Education/skills	Training in Agriculture	Work experience	Current business
Siufaga	Unasa	Form 5, District Junior School	Overseas training (1 month), local farmer training at Nu'u	Group leader, farming, fishing	Farming
	Nifo	Form 5, District Junior High School	Livestock training at Salelologa	Treasurer, farming	Gardening Farming
	Afoa	Form 3, Village Primary School	Informal group training	Non-group member, fishing, farming	Farming
	Veve	Form 5, Samoa College in Apia	Informal group training	Former group member, health clerk	Farming
	Ivoga	Form 5, Vaipouli College	Informal group training	President of women committee, gardening	Gardening
Samalaeulu	Ioane	Form 4, Junior High School	Farmer training at Nu'u, Informal group discussion	Group leader, farming	Farming
	Leapaga	Class 8, Primary School	None	Non-group member, fishing, farming	Farming
	Lusila	Class 7, Primary School	Informal group meeting	Non-group member, gardening for sale, weaving	Gardening
Malaemalu	Ulima	Form 5, Junior High School	Informal group meeting	President of Youth Club, fishing, cutting copra	Farming
	Soe	Form 4, family health	None	President of women committee, handicrafts, gardening for consumption	Weaving
	Moli	Form 5	None, learn from others	Non-group member, commercial farmer, businessman	Store, farm
Taelefaga	Siaosi	Form 6, theological training	Informal farmer training	Pastor, youth club patron	Gardening
	Gagoo	Form 4	Informal group training	Group member, farming, gardening for sale	Farming
	Elenoa	Form 5	Informal group training on compost	Group member, gardening for sale, weaving	Weaving
	Finau	Form 5	None	President of women committee, weaving	None
	Saitu	Class 8	Informal group training	Former group member, farming, fishing	Coconut selling, fishing

Siufaga is a pilot village during the Farming Systems Project and involved in T & V system and Bonus Scheme, Samalaeulu village farmers involved in T & V system, Bonus Scheme and FSD approach adopting PLA technique through CBOs (farmer groups), Malaemalu and Taelefaga village involved in Bonus Scheme, T & V system and FSD approach adopting PLA technique through youth clubs and family groups

Appendix 3:

Table 3 Biophysical data of individual farmers of 4 villages - age, sex, marital status, children, number in household, house type and occupation

Village	Name, Age	Sex	No. Household	House type, number	Household Assets
Siufaga	Unasa, 60	Male	2 children, 3 adults	2 local, 1 wooden, iron roofed	TV set, radio, stereo, water sealed toilet, electricity light, outside kitchen, refrigerator
	Nifo, 58	Female	5 children, 4 adults	1 european, 1 wooden, iron roofed	TV set, stereo, kerosene oven, electricity light, wood cooking, flush toilet, refrigerator
	Afoa, 57	Male	5 children, 4 adults	2 wooden, iron roofed, 1 local	TV set, stereo, water sealed toilet, wood cooking, electricity light, refrigerator, radio
	Veve, 58	Male	4 children, 7 adults	1 european, 1 wooden, iron roofed	TV set, radio, wood cooking, electricity light, refrigerator, water sealed toilet
	Ivoga, 54	Female	5 children, 3 adults	2 wooden, iron roofed	radio, TV set, water sealed toilet, wood cooking, electricity light
Samalaeulu	Ioane, 53	Male	4 children, 6 adults	1 brick house, 1 wooden, iron roofed	TV set, radio, water sealed toilet, wood cooking, electricity light, refrigerator
	Leapaga, 67	Male	4 children, 12 adults	2 locals, 1 wooden, iron roofed	TV set, stereo, water sealed toilet, wood cooking, electricity light
	Lusila, 42	Female	5 children, 2 adults	1 local	radio, pit latrine toilet, wood cooking, kerosene lamp
Malaemalu	Ulima, 55	Male	5 children, 2 adults	1 local, 1 wooden, iron roofed	radio, water sealed toilet, wood cooking, electricity lamp
	Soe, 62	Female	6 children, 3 adults	1 european, 1 wooden, roofed	TV set, radio, water sealed toilet, wood cooking, electricity light, refrigerator
	Moli, 59	Male	5 children, 6 adults	3 european, 1 wooden, iron roofed	TV set, stereo, store, flush & water sealed toilet, electricity light, refrigerator, freezer, wood cooking, gas cooker,
Taelefaga	Siaosi, 39	Male	5 children, 2 adults	1 local, 1 european	TV set, stereo, flush toilet, electricity light, kerosene oven, wood cooking, refrigerator
	Gagoo, 37	Male	3 children, 2 adults	1 local, 1 wooden, iron roofed	radio, kerosene oven, wood cooking, electricity light, water sealed toilet
	Elenoa, 36	Female	3 children, 4 adults	2 wooden, iron roofed	TV set, stereo, water sealed toilet, wood cooking, electricity light, refrigerator
	Finau, 43	Female	7 children, 2 adults	1 local, 1 wooden, iron roofed	TV set, radio, water sealed toilet, wood cooking, electricity light
	Saitu, 47	Male	3 children, 2 adults	1 wooden, iron roofed	TV set, radio, water sealed toilet, wood cooking, electricity light

Appendix 4: Location of Village Case Studies

